

13TH ANNUAL COAL STRIPPING NUMBER

# COAL MINING

April, 1957

UNIVERSITY MICROFILMS  
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ALLIS-CHALMERS • LIMA SHOVELS, CRANES, DRAGLINES • MASTER  
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mine equipment



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Michigan 175A . . . PILGRIM COAL CO., Volant



Jaeger Pump . . . WIDNOON CO., Kittanning



HD-21 crawler tractor, 204 net engine hp  
315 scraper, 20 yd heaped, 15 struck

## YOU CAN STRIP OVERBURDEN AND RECLAIM LAND PROFITABLY *with this crawler tractor-scraper team*

There is a marked trend toward reclaiming worked-out pits—and a parallel trend toward the use of Allis-Chalmers crawler tractors and scrapers. Both are examples of wise management.

**Land Reclamation**—already a law in many states—eliminates to a large extent the scarred and worthless landscapes left by abandoned pits and piles of overburden. Properly reclaimed land usually returns far more than the cost of reclamation in higher resale value. Even where pits can be only partially filled, the land may be seeded profitably for pasture.

**Allis-Chalmers HD-21 Crawler Tractor and 315 Scraper** are ideal for this type of operation.

This team is mobile and flexible enough to strip overburden and spread it immediately in a worked-out area of the pit. This eliminates the need of re-handling overburden and of calling in specialized equipment.

Curved and offset cutting edge on the scraper, plus torque converter drive on the tractor, are just two of many features that put this Allis-Chalmers team in a class by itself for this type of work. Let your Allis Chalmers construction machinery dealer give you the details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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*Engineering in Action*

**IN STOCK FOR YOU AT RECKWITH**



A Southern Ohio stripper cut over-all mining costs 25 cents per ton by augering low-cost recovery coal with this McCarthy Coal Recovery Drill. The recovery coal itself cost \$1.25 less per ton than the strip coal.

## AUGERED and STRIP COAL COMBINED CUTS STRIPPER'S COST 25 cents per ton

Auger-mine low-cost recovery coal to lower your stripping costs—as much as 25 cents a ton!

One Southern Ohio strip mine operator saved this much with only one McCarthy Model 14-30-36 Coal Recovery Drill. Working one six-hour shift per day with only two operators, he augered approximately 10,000 tons per month of recovery coal. The cost per ton, including make-ready, operation, maintenance, depreciation and hauling, was only \$2. By spreading this saving over his entire operation, he cut his delivered strip coal cost from \$3.25 to \$3 per ton. Strip coal output was about 40,000 tons per month.

This is why more strippers each year add McCarthy Coal Recovery Drills to their list of production equipment. The McCarthy drill is a cost-saver and a money-maker. It's self-moving, all hydraulic, and requires only two operators. Contact the nearest Salem Tool representative for details. For immediate service, phone or write direct.

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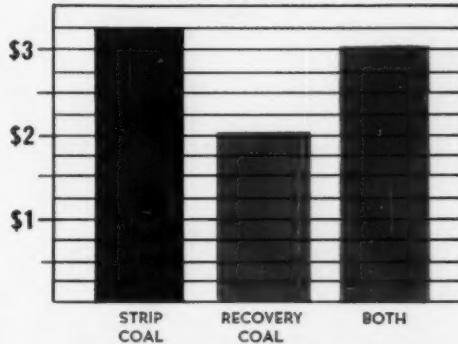
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### ***It Pays to Auger-Mine Low-Cost Recovery Coal***

MINING COST PER TON\*



\*Based on 10,000 tons of augered coal and 40,000 tons of stripped coal per month.

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OVER ONE AND A HALF MILLION DOLLARS

# IN STOCK FOR YOU AT BECKWITH...

WHAT'S THE MATTER?  
MORE TROUBLE?

YES, IT LOOKS LIKE A BROKEN  
LINK AGAIN! ANOTHER ONE OF  
THOSE SUBSTITUTES I PUT ON  
RECENTLY!

IT  
COULD  
HAPPEN  
TO  
YOU

TOO BAD. THEY'RE JUST NOT MADE  
THE WAY CATERPILLAR MAKES  
TRACK PARTS! ONLY SPECIALY-  
HARDENED PRETESTED STEEL GOES  
INTO CAT-BUILT LINKS!

ALL CAT-MADE TRACK PINS AND  
BUSHINGS ARE SPECIALY HARDENED,  
TOO! AND GENUINE CATERPILLAR-  
BUILT TRACK SHOES ARE MADE OF  
ONLY HIGH QUALITY ROLLED STEEL!  
THEY REALLY LAST, EVEN ON TOUGH  
JOBS LIKE THIS!

"I LEARNED MY LESSON. FROM  
NOW ON I'LL ALWAYS USE ONLY  
TRACK PARTS MADE BY CATERPILLAR!"



## REMEMBER THESE EXTRA BENEFITS WHEN YOU BUY FROM BECKWITH

When you purchase from your authorized Caterpillar Dealer, you are sure of parts that are made to the latest design, precisely manufactured of the right materials, thoroughly inspected and tested. With substitute parts, can you be sure of anything? In addition you receive your genuine factory parts from one source of supply, one source of credit and one source of responsibility.

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Our factory trained partsmen know your equipment . . . are prepared to interpret and fill your orders correctly from the millions of genuine parts in stock at our six locations. Draw on our inventory and use our manpower. Be safe with Caterpillar parts and Beckwith service!

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REPORT on new shovel-crane standards:  
(one in a series)

WHITLEY STRIP MINING CO., INC., Williamsburg, Ky., owns four Link-Belt Speeder shovels. The "super" reports, "Believe it or not, I can prove we're getting out more coal with our 1½-yd. K-370

stripping shovel than we did with a different 2½-yd. stripper." He credits this performance to plenty of power, hydraulic power steer and power hydraulic controls.

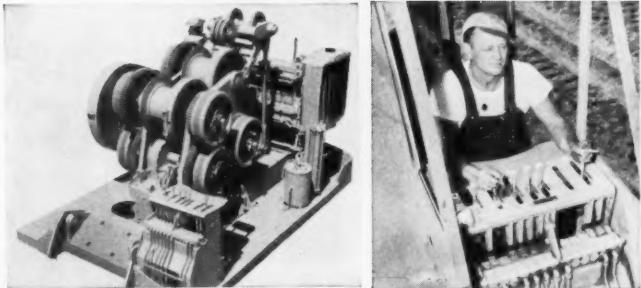
# Increasing cycles per shift

**Standard on every Link-Belt Speeder, Speed-o-Matic power hydraulic controls minimize operator fatigue. Response is fast, positive, precise**

Exclusive with a Link-Belt Speeder, this true power hydraulic control system allows the operator to put his machine through its paces at the flick of the wrist. He's not subject to costly end-of-the-shift letdown . . . stays fresh, pushes his machine to its high limit throughout the shift.

Hydraulic-actuated clutches are self-compensating for heat and normal lining wear. Kick the engine over and go to work. There are no frequent stops for clutch adjustments.

It's advantages like these that put Link-Belt Speeder years ahead of the field—in productivity, in low maintenance and service costs. Start having your equipment dollars earning bigger returns. See your Link-Belt Speeder distributor now. Or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.



**MORE USABLE HORSEPOWER** than other machines using the same make and model engine. Yet a Link-Belt Speeder remains well within the engine manufacturers' recommended operating speeds. It's possible because a Link-Belt Speeder is an extra-strength machine, designed and built to take full advantage of an engine's available power. This extra strength is evident in the size and quality of shafts, gears, clutches and structural members.

**TRUE POWER HYDRAULIC CONTROLS**—A Link-Belt Speeder exclusive, Speed-o-Matic power hydraulic controls transmit pressure through oil directly to the clutches . . . eliminate over 150 wearing mechanical parts. Clutches engage smoothly, positively—without jerk, jump or lag. Oil is maintained at proper pressure by an engine-driven hydraulic pump.

14,541

*It's time to compare . . . with*

# LINK-BELT SPEEDER

*Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls*

# COAL MINING

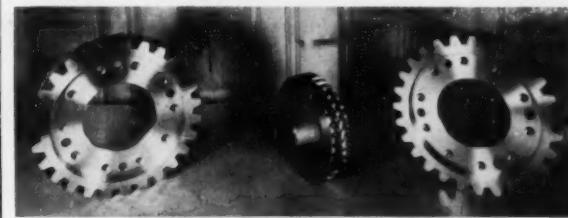
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No. 4

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Drills holes faster — Will not snap off shank or chip points — Outlasts four or five ordinary augers.

THE SALEM TOOL COMPANY

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**Year in . . . year out more and more  
mine operators like Robert Bailey  
rely on *Highway* Equipment!**



At Philipsburg, Robert Bailey, like other leading operators, uses Allis-Chalmers HD-21s for striping, backfilling, building access roads . . .



Michigan 175As load more for Robert Bailey. They are the biggest, most powerful, fastest rubber-tired tractor shovels ever built.

*Highway*



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Allis-Chalmers HD-21s guarantee that work will start on time...end on time at Robert Bailey operation, Philipsburg.



... and Lima 2400s are the last word in dependability!

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every type of equipment  
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Michigan Tractor Shovels and Excavator-Cranes

Thor • Jaeger

175A carries heaping loads

## Do You Know?

Studies of animals in a state of shock show that low temperatures increase survival time and that human shock patients may need air conditioned rooms during very hot weather, Drs. Burt R. Erickson and Fred E. D'Amour, Biologic Research Laboratories, University of Denver, and Dr. Donn L. Smith, University of Colorado School of Medicine, Denver, report in the Proceedings of the Society for Experimental Biology and Medicine.

The researchers studied the effects of nine different environmental temperatures on the survival time of rats in surgical shock. Shock is the dangerous, often fatal condition in which there is a collapse of blood circulation after injury, many times due to loss of blood.

Temperatures between 50 and 105 degrees Fahrenheit were used and the rats survived longest at a "room" temperature of 68 degrees Fahrenheit. Lower or higher temperatures were increasingly harmful, they reported.

These results agree with the belief that overheating shock victims, as practiced in the past, is "deleterious," the scientists reported.

• Trauma hospitals, to train young surgeons in the treatment of injuries, are needed throughout the country, Dr. Michael L. Mason, professor of surgery at Northwestern University Medical School, proposes in a communication to the American College of Surgeons.

Injuries that cause open wounds have assumed increasing interest and importance. Accidents take about 100,000 lives every year, cause up to 500,000 severe injuries, and probably total close to 10,000,000 injuries in the aggregate. Fortunately, most injuries are trivial and lead to little or no disability, particularly if a few basic principles of care are followed in their management.

But Dr. Mason feels that the warnings about the need for preparation to handle mass casualties, whether they come from nuclear warfare or civilian disasters, have not been heeded.

"The important thing is that we become trauma conscious," Dr. Mason believes.

"If some of the disease for which special campaigns have been set up caused one-tenth the mortality, misery, financial loss and disability that trauma does, or if we were threatened with an epidemic one-thousandth as serious as nuclear warfare, the country would go hysterical in campaigns to eradicate the disease and to train doctors in its management," he declared.

Fortunately, more and more hospital training is being given in the treatment of wounds, the surgeon said, and the old system whereby the emergency room is staffed by the youngest and least experienced members of the hospital staff is changing.

But still, Dr. Mason finds that trauma has been dignified by honorable status in only a few of the country's large centers and teaching hospitals.

Dr. Mason reported on the need for trauma hospitals and other new approaches to the treatment of open wounds in the Bulletin of the American College of Surgeons (Jan.-Feb.).

## HERE AND THERE IN THE COAL INDUSTRY



Mining Men observe activities of 100th Army Engineers at Camp Prince, W. Va. Seated left to right are: J. W. Compton, Electrical Engineer, Appalachian Electric Power Co., Bluefield, W. Va.; Captain Edward Lawler, 100th Army Engineers, Camp Prince, W. Va.; Lloyd G. Fitzgerald, Mining Engineer, U. S. Bureau of Mines, Mount Hope, W. Va. Standing left to right: Lieutenant Keith Stokes, 100th Army Engineers, Camp Prince, W. Va.; W. E. Kidd, Electrical Engineer, Appalachian Electric Power Co., Bluefield, W. Va.; Douglas Crickmer, Mining Engineer, Pocahontas Land Co., Bluefield, W. Va.; Felix Fisher, Electrical Engineer, Appalachian Electric Power Co., Beckley, W. Va.; Thomas Howard, Mining Engineer, The New River Co., Mount Hope, W. Va.

This was a joint meeting of the Eastern Chapter, Bluefield, W. Va. and the Appalachian Chapter, Beckley, W. Va. of the West Virginia Society of Professional Engineers. The Engineering Chapter members saw the U. S. Engineers erect a pontoon foot bridge across the Blue Stone river under simulated battle conditions.

• Appointment of Howard Marriott as eastern regional sales manager of Galion Allsteel Body Company is announced by O. C. Henkel, vice president.

In his new post, Mr. Marriott will coordinate the sale of Galion Allsteel dump bodies, hoists and hydraulic tailgates in his territory. Mr. Marriott's previous experience includes 5 years as sales engineer for a major truck equipment distributor in Cleveland.



Howard Marriott, newly-appointed eastern regional sales manager of Galion Allsteel Body Company.

# VERSATILE BUCYRUS-ERIE STRIPPER WITH THE RIGHT CAPACITY AND REACH



## Bonus Quality

*saves you money*

Whether your stripping operation requires a dragline, stripping shovel or a standard shovel, the Bucyrus-Erie 88-B offers the flexibility to do the job to your satisfaction.

With either of these three front ends, the 88-B puts more than 75 years of Bucyrus-Erie know-how on your job. It is a dependable, basic excavator—designed to function efficiently with whichever front end best fits your needs.

The 88-B's big diesel power plant, with your choice of torque converter or direct drive, provides plenty of power for the toughest digging and transmits it with high efficiency through the anti-friction bearings to the point of use. Its smooth, soft air controls permit easy, fast operation while retaining the "feel" of control for the operator.

This outstanding stripping specialist is rated at 2 to 5 cubic yards as a dragline, 3 cubic yards as a stripping shovel and 4 cubic yards as a standard shovel. Take your choice and be secure with the knowledge that your stripper comes equipped with Bucyrus-Erie mining know-how.

361E57

See Us at the COAL SHOW  
CLEVELAND, May 13-16, Booth 1823

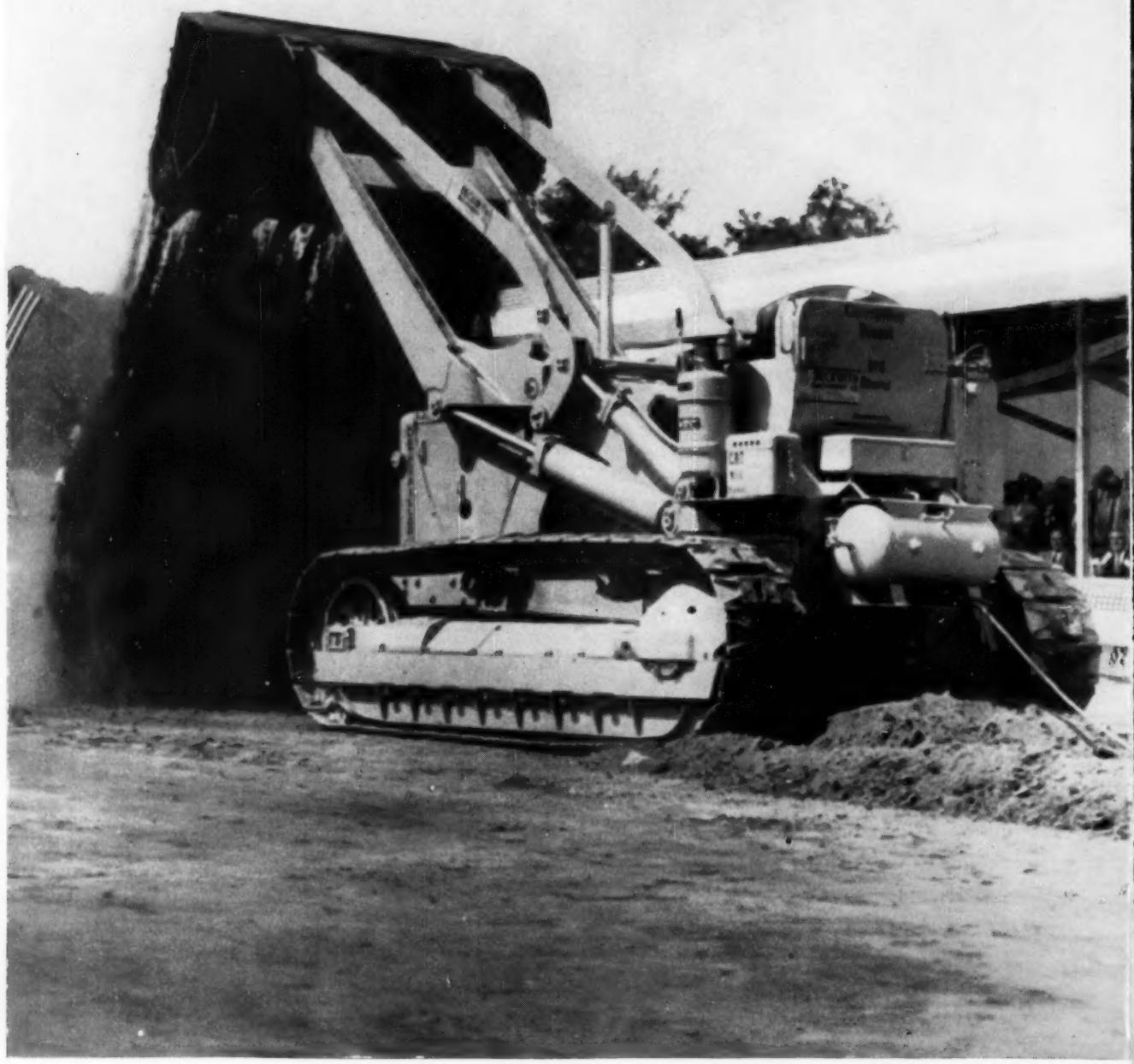
**BUCYRUS  
ERIE**

SOUTH MILWAUKEE  
WISCONSIN

A Bucyrus-Erie 88-B dragline strips rock and shale overburden at Beaver Valley, Pa. The machine is owned by the Dean Coal Company, Ramey, Pa.

**Bonus Quality** Specifications for molding and core sands are rigidly adhered to in the production of castings. Sand compositions must meet close specifications for permeability, moisture content, compression strength, and high-temperature properties. Here, a laboratory technician uses an electronic meter to determine the PH (acid-alkaline ratio) of the sand mixture.





# NATURAL RESOURCES, SCIENCE

---

## *and Our Future*



Natural resources contained in the crust of this earth comprise the major source of our wealth. It is therefore, a matter of concern that they be mined properly and that all valuables be extracted. Waste of coal resources in strip or deep mining demands immediate attention of leaders in the industry and cannot be passed off with closed eyes or a dumb mouth.

Physically, man has never been the most powerful creature on this earth, yet from the dawn of his culture to modern times it has been his ambition to master his environment.

Energy releases man from drudgery and scientific research in power driven machines is an effort to elevate man. Freedom and scientific research have given the average American worker more tools and kilowatts at his command than any where else in this world.

The horizon for technical advances is unlimited. We all have a vital stake in seeing that our socie-

ty adjusts properly to the revolutionary impact of scientific advances.

There is now going on a running battle between scientific progress and some of the entrenched officials in industry who are unable or unwilling to grasp the significance of the present progress and its influence on humanity.

We must, now, give very serious thought to training young men in cybernetics, the mathematical concept of control, communication and organization which will make possible the many operations of our future automatically operated machines.

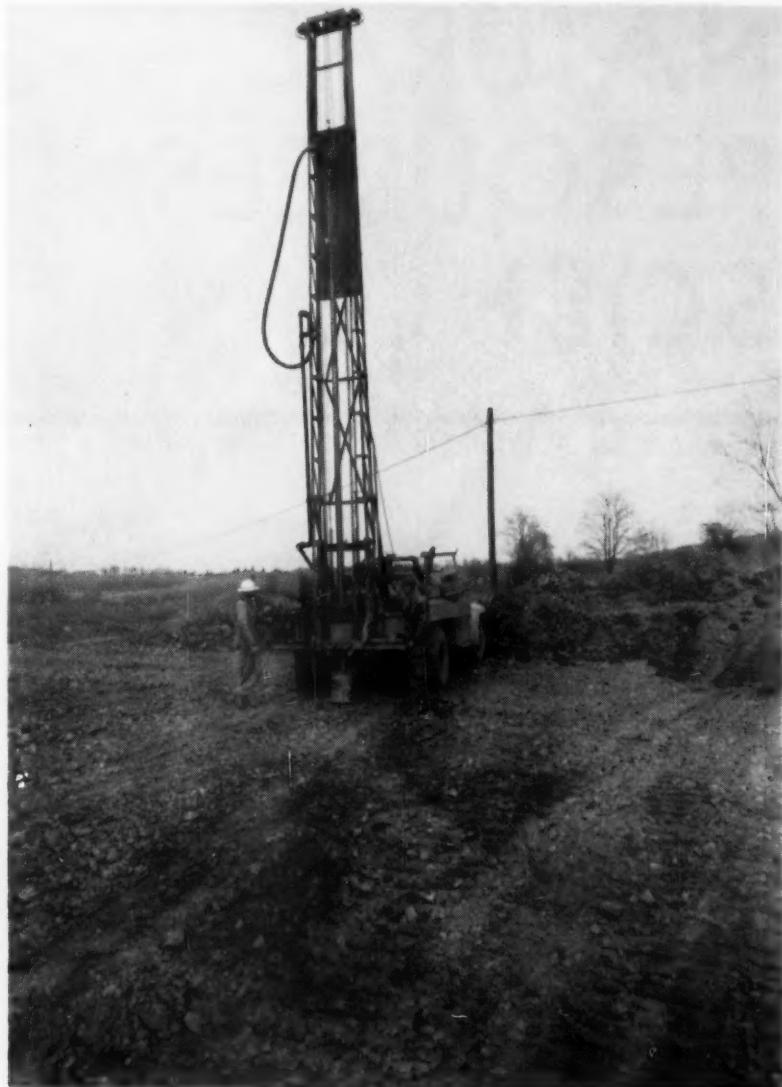
Those who will undertake the lead in this endeavor will have to learn to face the risks, the hazards, the obstacles and obstructions that will face them. They will have to learn to overcome those difficulties with the same high courage and the same high resolutions that have characterized the pioneers of our great nation.

Caterpillar No. 6 tractor shovel which was started by remote control, last summer from President Eisenhower's vacation headquarters in Colorado to break ground for the atomic power plant at Shippensburg, Pennsylvania.



# SUNBEAM COAL COMPANY

*adds new*  
**EQUIPMENT**



Operating in new territory at Cherry Valley in the Northern part of Butler County, Pennsylvania, the Sunbeam Coal Company has added to its operation a Manitowoc Model 4500 Dragline with 6 yard bucket and a Mayhew Hurricane vertical blast hole drill.

A Bucyrus-Erie Model 54-B Dragline is also used at this operation, as well as a D-8 Caterpillar Tractor.

*Twelve Years  
Uninterrupted  
Service from*  
**LINK-BELT**



Twelve years of uninterrupted service is what the De marsh Coal Company says about its Model 360 Link-Belt Dragline and Caterpillar D-7 Tractor. Powered by a Caterpillar D-13,000 engine the Link-Belt Dragline worked approximately 30,000 hours without an overhaul. The D-7 Tractor, working along with the dragline at different localities and under different conditions in the vicinity of Harrisville, Pennsylvania, has also given the same uninterrupted service.

# MIKE MAZZARAO STANDARDIZES...



The 88-B Dragline, left, and 54-B Dragline, right, stripping in one of the pits of Mike Mazzarao. The 51-B Shovel is in the pit loading out coal.

*...on one make of*

*stripping equipment*



The 38-B Shovel loading out coal.

---

Having overburden consisting of tough shale, overlain by four or more feet of a limy sandstone, in the vicinity of Clinton, Pennsylvania, Mike Mazzara is using all Bucyrus-Erie equipment consisting of an 88-B dragline with 100 foot boom and 5 yard bucket and

two 54-B draglines with 80 foot booms and 2½ yard buckets. He also uses a 38-B shovel with 1½ yard bucket and a 51-B shovel with 2 yard bucket to load out coal. The Pittsburgh seam of coal is being recovered, running about 5 feet thick. Two McCarthy horizontal

blast hole drills are also used. His product can be screened and sized to meet the local domestic trade or it can be loaded direct from the seam for industrial or public utility fuel. All the output is trucked.

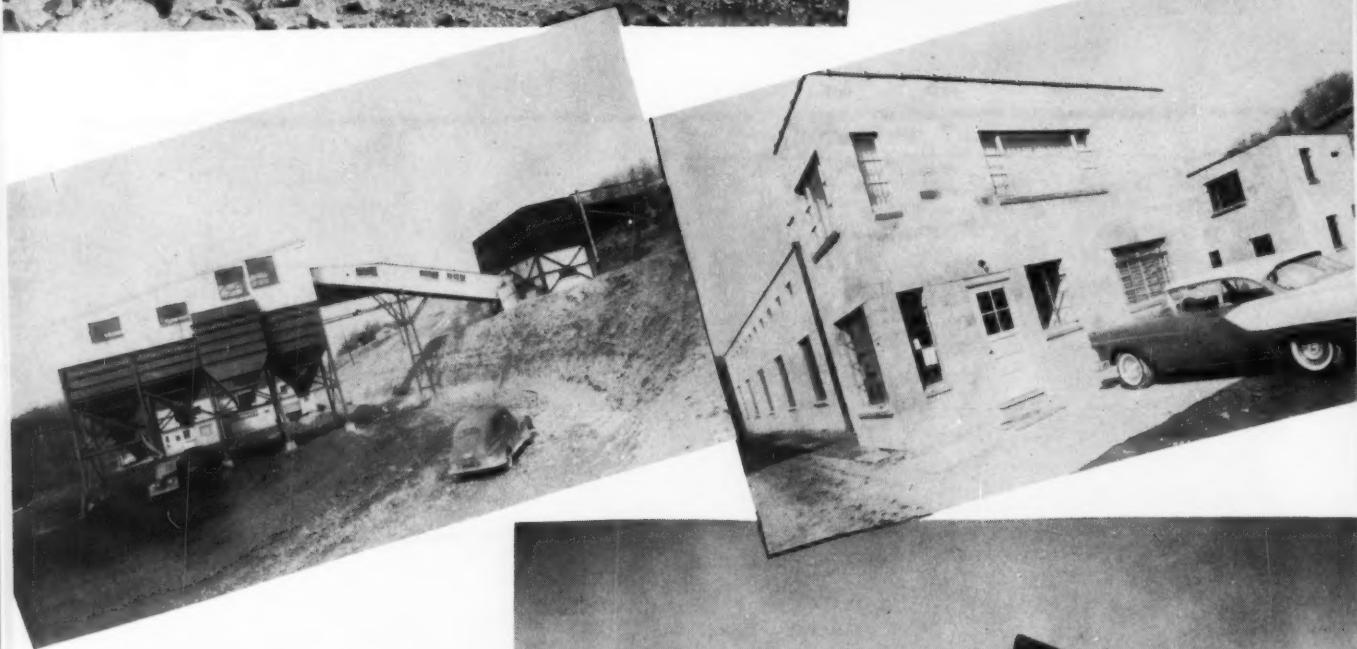
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A 54-B Dragline stripping at another plt.





The 360 horse power engine furnishes continuous conservative power all the way up the cut.



The new screening and sizing tipple.



True and adequate horse power allows swing at or near engine idling speed, effecting operating economies.

# Recent Improvements at the TERRAMANA BROS. COAL COMPANY

The Terramana Brothers, operating west of Steubenville, Ohio, have added to their operation a new tipple to supply a more discriminating market, a new concrete block building for housing the office and repair shop and a new Model 4500 Manitowoc shovel. The new shovel is powered by a 360 horse power White Superior engine. This shovel has a 60 foot boom with 45 foot stick which provides it with the necessary reach to take up to 70 feet of overburden of yellow and gray shale and deposit it on the spoil pile with ease.

Economy highlights this operation as the big 4 yard rig, working on a quick cycle literally powers away almost 400 yards of overburden per hour in one of the most efficient stripping operations from a time and cost standpoint in the company's history. Officials estimate production costs on this job to be almost 20 percent less than that of previous equipment used on similar jobs.

For Terramana, this appreciable reduction in stripping costs was brought about through an extensive study of primary operating problems prior to the final selection of the unit. It was learned that operating costs were gradually climbing, and it became apparent that stripping costs had to be reduced to effect a continued profitable mining operation. Further-

more, experience had shown that operating a shovel at a minimum cost in repairs and overall maintenance was contingent to a great extent upon: 1. Design characteristics of the unit. 2. The particular design and horsepower rating of its power plant.

With this in mind the brothers made another study of those factors governing maximum output of a shovel at the very minimum in operating and maintenance costs. After considerable deliberation the Manitowoc 4500 was selected as the unit most suitable for the job.

#### Horsepower Looms as Factor:

Satisfied the shovel has the necessary stability, maneuverability and design characteristics to effect an economical operation, the company concerned itself with the all important source of power.

One of the foremost considerations was that of selecting a power plant capable of delivering sufficient horsepower to permit the engine to operate without strain under the most adverse digging conditions. They were looking for "true" horsepower, or that which is rated at actual conditions of operation, and not under idealistic conditions which is rarely the true pattern of operation.

According to Albert Terramana, the misconception on the part of operators as to the horsepower rating of an engine can result in

operating and maintenance costs far exceeding that of normal. "All too frequently," he says, "it has been necessary to operate a shovel engine at its maximum power in order to bite into heavy overburden. This 'wide open' type of operation greatly increases costs and frequently causes a shovel to breakdown completely due to the working strain."

In selecting the White Superior Engine for their rig, the continuous conservative horsepower rating of 360 proved more than adequate.

The engine has sufficient horsepower and torque to enable the shovel to take a healthy bite from the overburden and swing back to the spoil pile at a speed near that of idling. This ease of operation, due to "true" and adequate horsepower, has proved a decided factor in the overall operating economics of the unit which is now in service for two, ten hour shifts every working day without shutdown.

Manufactured by the White Diesel Engine Division, Springfield, Ohio, the Superior power plant also permits complete diesel operation anywhere without a trailing cable or electric supply.

From the standpoint of labor fatigue and routine maintenance procedures, the vertical, in-line engine allows plenty of room for quick and easy maintenance with no trouble due to space limitations. Full enclosure of engine insures freedom from dirt and dust. Large removable panels allow quick access to all internal parts for inspections, adjustments, or repairs, truly a labor saving and cost cutting feature.

The simplified vertical design also offers advantage in requiring fewer replacement parts. The engine's six cylinders provide power equal to that of other engines having more cylinders but at considerably less fuel consumption. The open chamber combustion system enables the engine to operate exclusively on non-premium fuels, thus another substantial savings is realized for Terramana Coal.



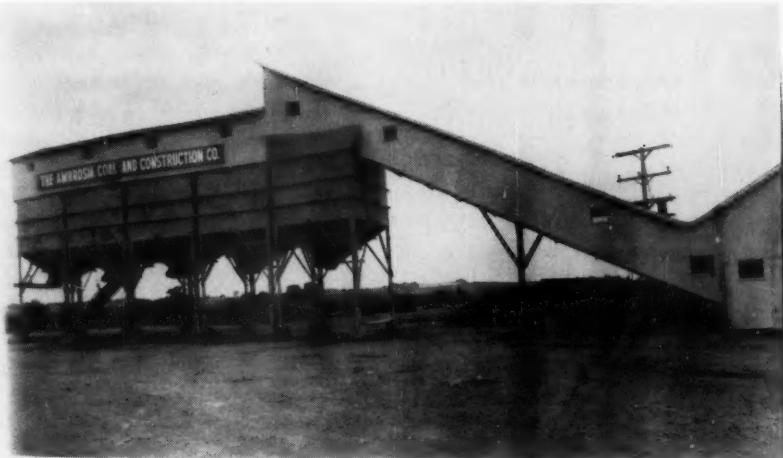
Model 4500 Manitowoc Dragline at the Eastbrook operation of the Ambrosia Coal & Construction Co.

## AMBROSIA'S

## Eastbrook Operation

At its Eastbrook operation, near New Castle, Pennsylvania, the Ambrosia Coal and Construction Company is using a Model 4500 Manitowoc dragline with 120 foot boom and 5½ cubic yard bucket to move up to 48 feet of overburden consisting of gray and yellow shale. The coal is loaded out with a 3/4 yard Lime Paymaster shovel.

Tipple of the Ambrosia Coal & Construction Co.





McCarthy Blast Hole Drill at the K & P Coal Co.

## Late Model Machines at the K & P Construction Co.

The K & P Construction Company is operating near Follansbee, West Virginia. Follansbee is on the Ohio River just below Steubenville, Ohio. In that area the Pittsburgh seam of coal lies in the hills high above the river. The coal seam runs five feet in thickness and up to 65 feet of overburden is moved, consisting of tough yellow shale and rock. A model 4500 Manitowoc dragline, equipped with 6 yard Esco bucket and a 6 inch McCarthy vertical type blast hole drill are new pieces of equipment at this operation. The output is trucked to barges down on the river, then shipped to Electric Utility plants in the vicinity.



Manitowoc Model 4500 Dragline with 6 yard Esco Bucket at the K & P Coal Co. near Follansbee, W. Va.

*the*

# METRE

*system*

★

When should an old machine be replaced? How can it be determined that it is more economical to replace present equipment with a new machine particularly when the present machinery appears to be operating satisfactorily?

These are questions posed quite frequently in the minds of many owners. And the replies appear to have been as numerous as the people seeking answers.

Several methods are now in use in the field to determine this economical time to replace. One owner pointed out that when a tractor reached an age of three years it became a headache. He didn't like headaches, so he replaced his tractor every three years. Some companies replace their tractors just before a major overhaul is needed. Another method is to replace older machines whenever there seems to be some extra money in the treasury.

The METRE (Most Economical Time to Replace Equipment) METHOD has been developed by

Caterpillar Tractor Co. to aid the equipment owner to detect the point of lowest possible hourly operating costs. This important factor can be removed from the realm of intuition and evaluated on a dollar and cents basis. The accuracy, of course, is dependent upon the specific data the owner can supply from his own records. This method was primarily worked out for crawler tractors, but it can be applied to other types of equipment.

Before getting into the mathematics of economical replacement, it is important to review some of the factors to be considered. The first and most evident factor is major repair and overhaul costs. But of equal importance, though not so apparent, are the costs of productivity, unavailability and capital decline.

#### MAJOR REPAIR AND OVERHAUL

As the tractor, or any other piece

of equipment, gets older, the repair cost gets higher. For example, the engine would require only rings, liners and a valve job on the first overhaul, but on the second might require new crankshaft, bearings and pistons, plus the same items as on the first. A similar pattern would apply to the cable control, master clutch, steering clutches and other components serviced as a whole. Attachments can be included, and tires substituted for track components on rubber tired units.

#### PRODUCTIVITY

One of the most difficult factors to measure is productivity. Improvements are constantly being made. Tractor horsepower has increased approximately 20 percent in the last ten years. While horsepower is not directly proportional to increased production, other improvements, such as hydraulic-boosted controls, better visibility and better stability, increase at

**The world-famous line of  
CAT DIESEL TRACTORS**



**YOUR CATERPILLAR DEALER OFFERS  
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Whether your job is large or small, there is a Caterpillar track-type Tractor that will do your job best. You have a complete family of tractors available—ranging from 38 DBHP to 260 DBHP. For each of these tractors there's a complete line of matched working tools to help you get maximum production in every class of work.

Job-wise contractors know that it pays to standardize on Cat-built equipment for all of their earthmoving requirements. Not only do

they have equipment that can handle a variety of jobs without costly down time, but their operators and mechanics become familiar with one make of equipment. They know we stand behind *all* the products we sell—from engine to tracks, always ready with parts and service for every need.

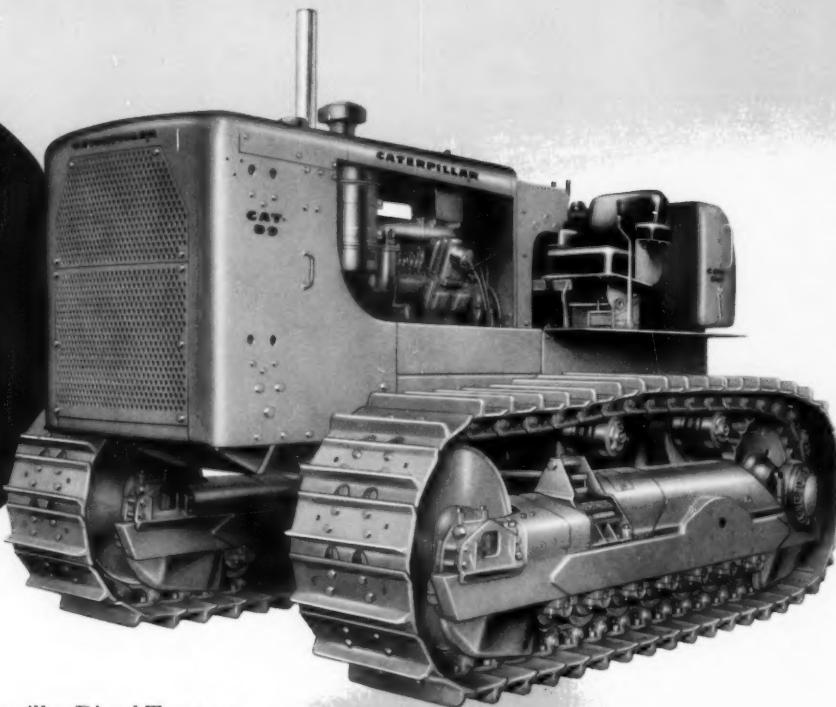
We'll back everything we've said with a demonstration. Call us and we'll show you why Caterpillar-built Tractors belong in your profit picture.

**A CAT DIESEL TRACTOR CAN STEP UP YOUR PRODUCTION**

# STANDARDIZE AND PROFIT WITH ...

## D9

### KING of the CRAWLERS

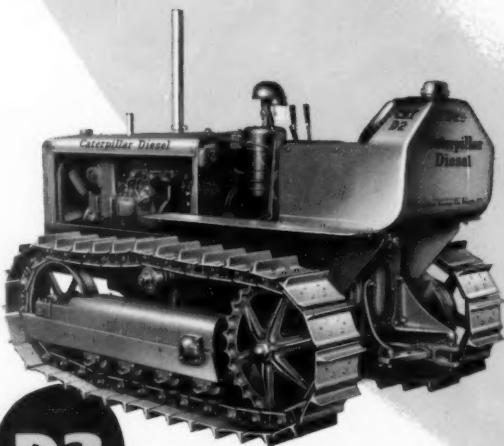


Here's the top of the line of Caterpillar Diesel Tractors . . . the big D9! For more than two years, D9s have met with overwhelming acceptance on every kind of job in the construction field. They have become the standard of excellence by which all other tractors are measured. Its D353 Turbocharged Engine . . . most powerful crawler engine in the field . . . unleashes 320 horsepower to haul or push bigger loads, move more dirt faster. The new D9 is engineered for bigger-than-ever jobs . . . to make you more money . . . to break its own production records!

The D9 has the many time-proved features of all the Caterpillar Diesel Tractors illustrated here: Power plant for every Cat Diesel Tractor, large or small, is a Cat-built Engine which is designed specifically for the tractor. This gives you the proper balance of power, traction, weight and maneuverability to get maximum production at lowest cost. Caterpillar equipment—all of it!—is built to beat your toughest jobs. Protected final drives and track rollers keep dust, muck and water out, lubricant in.

Full-flow oil filters increase engine life, lengthen periods between oil changes. Let us show you the many other quality features.

**320 HP (Flywheel)  
260 HP (Drawbar)  
choice of torque converter or  
direct drive with oil clutch**

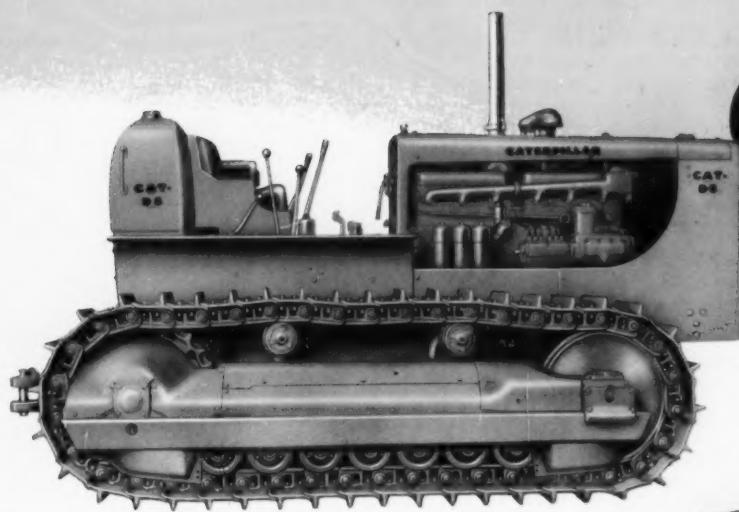


## D2

**48 HP (Flywheel)  
38 HP (Drawbar)  
choice of exclusive, adjustment-free oil clutch or dry clutch**

## Backed by the World's Greatest

# CAT DIESEL TRACTORS

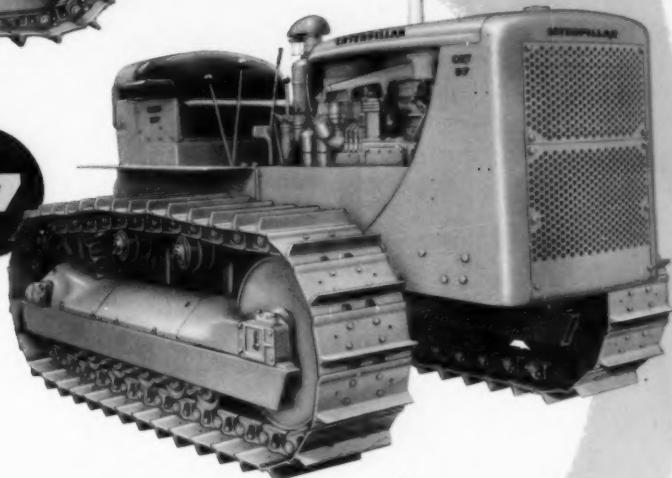


**D8**

191 HP (Flywheel)

155 HP (Drawbar)

choice of torque converter or  
direct drive with oil clutch



**D7**

128 HP (Flywheel)

102 HP (Drawbar)

exclusive, adjustment-free  
oil clutch is standard



**D4**

63 HP (Flywheel)

50 HP (Drawbar)

choice of exclusive, adjustment-  
free oil clutch or dry clutch



**D6**

93 HP (Flywheel)

75 HP (Drawbar)

exclusive, adjustment-free  
oil clutch is standard

**Equipment Dealer Organization**

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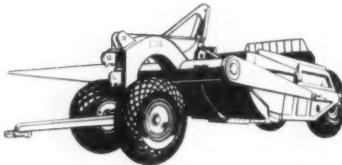
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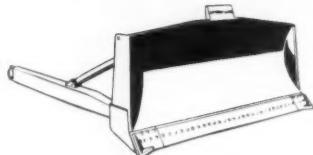
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CM-6

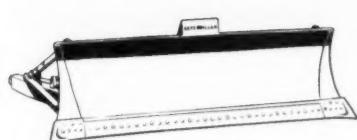
## MATCHED TOOLS FOR CAT DIESEL TRACTORS



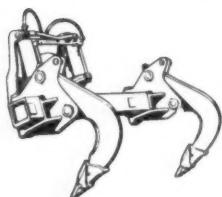
CAT SCRAPERS complete line from 4.5 to 27 cu. yd.



CAT STRAIGHT DOZERS hydraulic or cable controlled



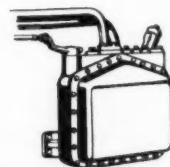
CAT ANGLE DOZERS hydraulic or cable controlled



CAT RIPPERS tractor-mounted

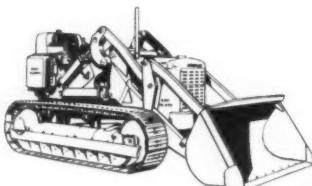


CAT CABLE CONTROLS front and rear mounted

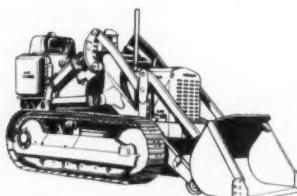


HYDRAULIC CONTROLS, vane-type pumps and precision valves

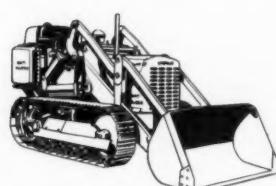
## PLUS CAT-BUILT TRAXCAVATORS AND ATTACHMENTS



No. 977—2½ cu. yd. capacity. 100 HP (Flywheel). Speeds, 1.9 to 7.4 MPH



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COMPLETELY **CATERPILLAR** BUILT

DT1712

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## WORK SHEET FOR DETERMINING ECONOMIC LIFE OF TRACK-TYPE TRACTORS

	YEARS									
	1	2	3	4	5	6	7	8	9	10
Hours Operated Each Year	1800	1800	1800	1500	1500	1500	1500	1500	1500	1500
Total Hours at End of Year	1800	3600	5400	6900	8400	9900	11400	12900	14400	15900
Major Components	REPAIR AND OVERHAUL COST PER HOUR									
Engine	0	0	.0	.12	.12	.12	.12	.23	.23	.23
Steering Clutches	0	0	.09	.09	.09	.09	.09	.09	.09	.09
Brakes	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07
Tracks	0	.62	.62	.62	.62	.62	.62	.62	.62	.62
Cable Control	0	.03	.03	.07	.07	.06	.06	.07	.07	.07
Roller Frame & Sprocket Group	0	0	.38	.38	.38	.38	.49	.49	.49	.55
Master Clutch	0	0	0	0	0	0	.06	.06	.06	.06
End Bits & Cutting Edges	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08
Transmission & Final Drives	0	0	0	.14	.14	.14	.14	.29	.29	.29
Guards, Hoods, Fenders	0	.09	.09	.18	.18	.18	.18	.18	.18	.18
TOTAL REPAIR & OVERHAUL COST/HR.	.15	.89	1.36	1.75	1.75	1.74	1.91	2.18	2.18	2.24
PRODUCTIVITY COST PER HOUR	0	.20	.40	.60	.80	1.00	1.20	1.40	1.60	1.80
UNAVAILABILITY COST PER HOUR	.40	.50	.70	1.10	1.40	1.70	1.80	1.90	2.00	2.00
CAPITAL DECLINE COST PER HOUR	1.22	1.55	.89	.80	.27	.27	0	0	0	0
TOTAL COST PER HOUR*	4.77	3.14	3.35	4.25	4.22	4.71	4.91	5.48	5.78	6.04
AVERAGE HOURLY COST IF TRACTOR IS REPLACED AT END OF GIVEN YEAR	4.77	3.95	3.75	3.86	3.93	4.04	4.16	4.31	4.46	4.62

\* Excluding operator, fuel, grease, etc.

about the same rate as horsepower.

If an old tractor is used, it should be charged with the difference in ability to produce between it and a new machine. The old tractor should be charged for its inability to produce as much as the new tractor.

This charge should not be made in all cases. If the old machine can supply all the needs of a crusher plant, a new machine can add no productivity. In this case productivity is governed by the unit it is working with, rather than the tractor itself.

This charge may be made in several ways. If it is working alone, a fair, although conservative, way would be to charge the tractor with the cost of renting a machine to make up the lost production. If the

tractor is pushloading scrapers, it should be charged with the cost of renting a push tractor and scrapers to make up this lost production.

## AVAILABILITY

The machine should also be judged on the basis of availability, or the number of hours the machine is down in comparison to the number of hours it could have worked. This should not include time for major overhauls, but should include any delays for minor adjustments, repairs and greasing.

A new tractor will usually be available about 96 percent of the time. The older a machine, the more time will be required for adjustments and repairs. To charge a tractor for not being available, compute the cost of renting a com-

parable size machine during the time the tractor is not available.

## CAPITAL DECLINE

Equipment owners do not replace equipment every season, usually, because the difference between original cost and trade-in value would cause prohibitive operating costs. This difference is called "Capital Decline." This cost, the difference between purchase price of a current machine and true value of the existing machine, should be charged to the tractor in the year the decline occurs, and not averaged over the life of the machine.

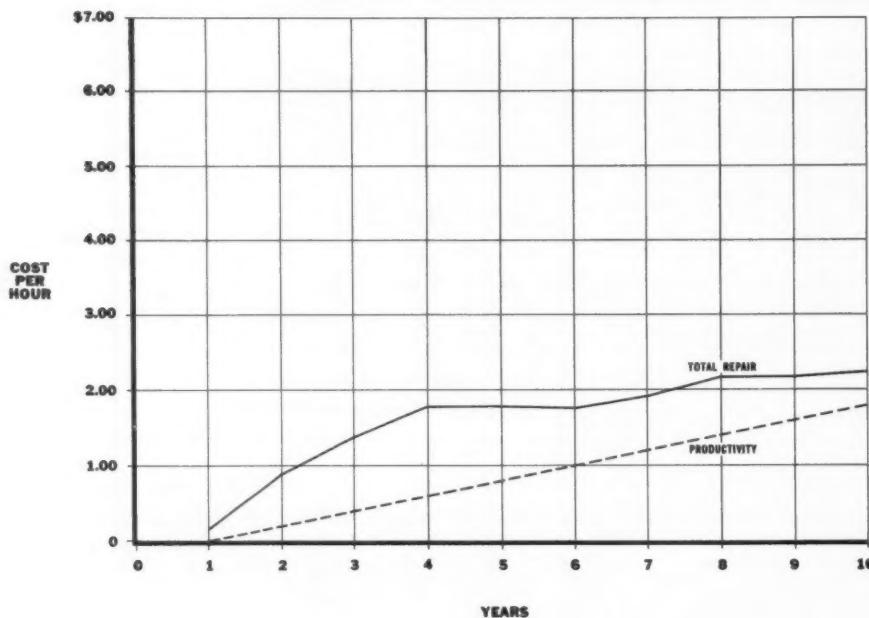
## METRE METHOD

To determine the most economical time to replace equipment, find the total cost of major repairs and overhauls, productivity, availability, and capital decline for each year. Then average the costs of the first and second years to find the average cost per hour if traded at the end of two years. Do the same for the first three years, and so on until the lowest cost per hour is found. The number of years which will produce the lowest hourly cost would be the number of years the tractor can be economically operated.

The charts will show how these rates are figured. In making these charts, Caterpillar used an average-sized machine, costing about \$20,000, and assumed it would work 1800 hours each of the first three years, and 1500 hours each year thereafter. In this example, the lowest hourly rate occurred at the end of the third year. The 11 cents difference between the third and fourth years appears to be small, and many owners wonder why they should replace on such a small basis.

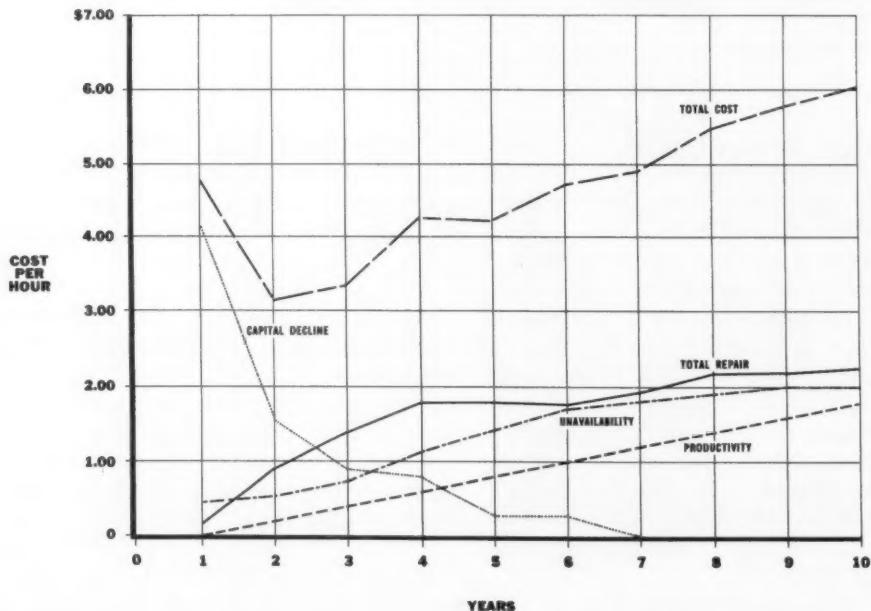
It must be understood that if the tractor was originally set up to operate for three years, the charge per hours for the fourth year would then be \$4.25 per hour. The actual difference in dollars between the third and fourth year operation would be \$795.00 (or 6900 hours at 11 cents per hour).

### METRE METHOD FACTORS



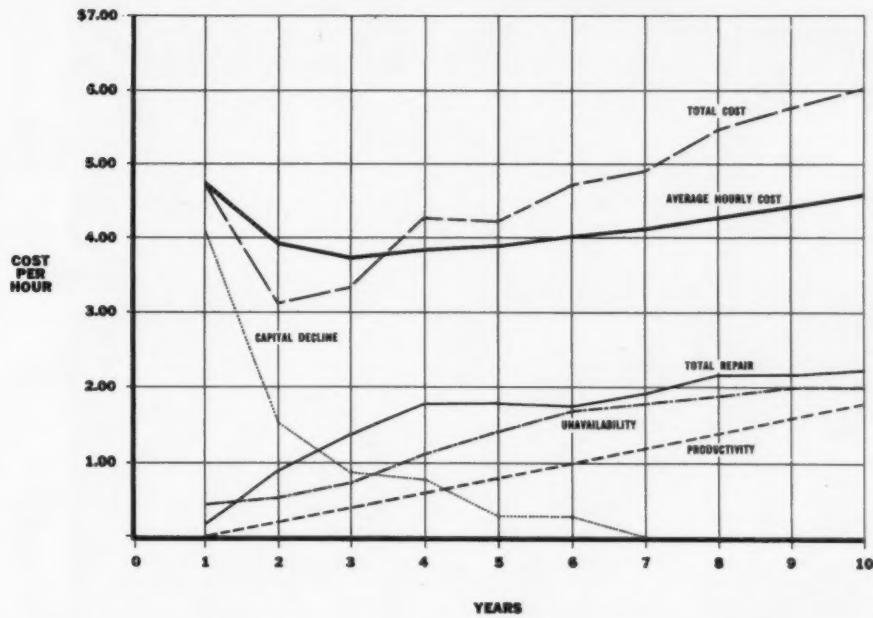
To determine the most economical time to replace equipment, first consider the total of major repair and overhaul costs. These increase as the machine ages. Productivity decreases in a straight line, due to the increased ability of new equipment.

### METRE METHOD FACTORS



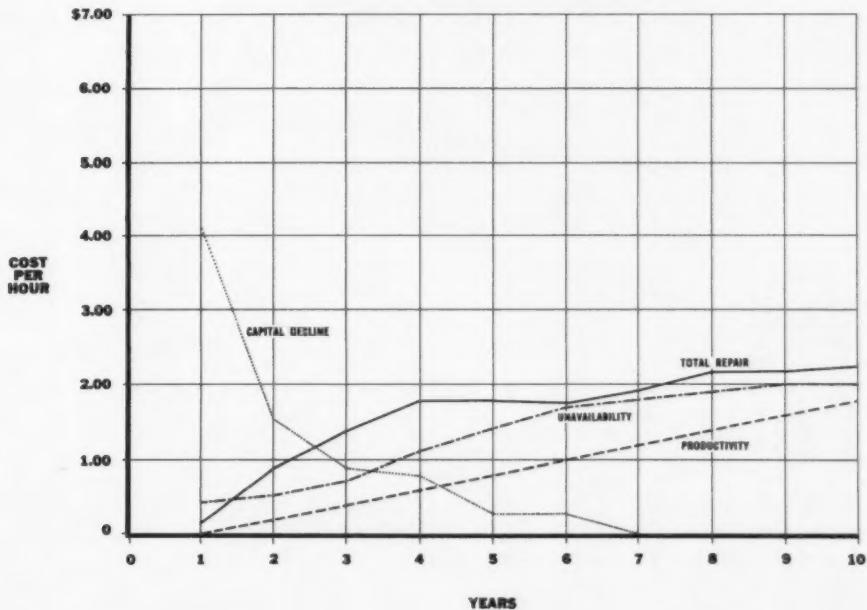
Combining these four factors, we arrive at a total cost for the machine reaching a low point at the end of the second year. The yearly costs then start to rise as the machine gets older and less efficient.

### METRE METHOD FACTORS



The Most Economical Time to Replace Equipment is determined by averaging the total costs up to that time for each year. It can be seen they reach the lowest point around the third year, then start increasing. Every year after that time the machine is operated at a higher average cost per hour.

### METRE METHOD FACTORS



Unavailability increases as a machine gets older, requiring more frequent adjustments and repairs. And each year it decreases in capital value.



Bucyrus-Erie 88-B Dragline stripping in the lower pit.

Bucyrus-Erie 54-B Dragline stripping in the upper pit.

# Two Seam stripping at PERRY- ROSS COAL CO.

At its operation near Harlansburg, in Lawrence County, Pennsylvania, the Perry-Ross Coal Company has also standardized on one make of stripping units to move cover off two seams of coal on its property.

Overburden on the upper seam of coal which runs 28 inches in thickness consists of yellow shale and up to 35 feet of cover is moved with a Bucyrus-Erie 54-B dragline. In the lower seam of coal a Bucyrus-Erie 88-B dragline is used to move up to 55 feet of hard yellow shale that has some layers of rock in it.

Coal from both seams is loaded out with a Bucyrus-Erie 22-B shovel. Water is pumped from the pits with two 4-inch Jaeger pumps.

Bucyrus-Erie 22-B Shovel loading out coal.



One of the two 4-inch Jaeger Pumps used to dewater the pits.



Six-inch McCarthy Blast Hole Drill at one of the operations of the Hilliard Coal Company in the vicinity of West Sunbury, Butler County, Pennsylvania. This drill blasts overburden for a Lima Model 1201 Shovel which uncovers the Brookville seam of coal in an area that has been deep mined. The coal is about 5 feet thick at that point. The coal being stripped lies in the outcrop areas and about one third has been mined out by the deep method.



Twenty-four inch McCarthy Coal Recovery Drill, driven by General Motors Diesel Engine at the Hilliard Coal Company.



EQUIPMENT  
to  
SUIT CONDITIONS  
*at the*  
**HILLIARD  
COAL  
COMPANY**

An HD-21 tractor assisting strip shovel up a hill at another Hilliard Coal Company operation. Here one of the thinner seams of coal is being stripped, the coal veins being known under so many names, in the area, there is no way of telling definitely what seam is being mined.

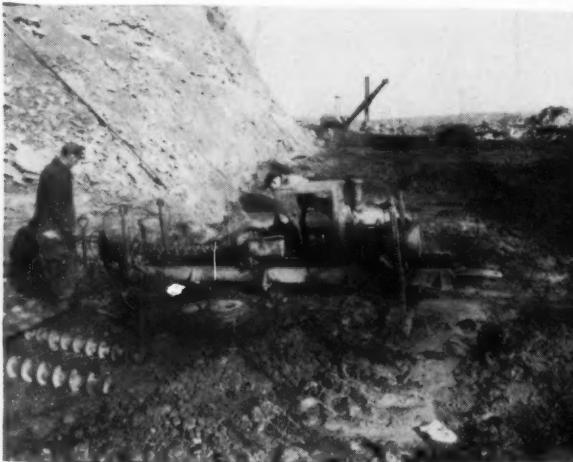




The HD-21 tractor which is making possible economic stripping at the Ivywood Coal Co.

## HD21 Tractor Big Factor in Economic Stripping at Ivywood Coal Co.

Having only an average of 30 inches of coal at its operation, the Ivywood Coal Company has found that its HD-21 tractor is a very big factor in its economic battle to keep stripping costs down. Working with a dragline this tractor has made it possible to increase the stripping range of the dragline, thus permitting stripping a larger area.



Horizontal Blast Hole Drill making shot holes in cover on the Bakerstown Seam.



Caterpillar D-9 Tractor cleaning surface of the Bakerstown Seam.

**Sam Morino is  
STRIPPING TWO SEAMS  
IN THREE PITS  
at Thomas, West Virginia**

Euclid Tractor cleaning surface of the Bakerstown Seam.



Caterpillar Model 12 Motor Grader cleaning surface of the Bakerstown Seam.



**Euclid Trucks are used to haul overburden off the Freeport Seam.**

At Thomas, West Virginia, which lies more than 3,000 feet above sea level, two seams of coal outcrop in the higher areas of that region. They are the Bakerstown seam which lies above Pittsburgh seam in Western Pennsylvania and the Freeport seam which lies 500 feet below the Pittsburgh seam at Pittsburgh.

The Bakerstown seam is the top seam and at Thomas it runs 28 inches thick. The overburden on it consists of a loamy mixture of ground sandstone. As the cover gets thicker it consists of a hard yellow shale and sandrock, and must be shot for stripping. At the outcrop of this seam, the cover rises gradually and lends itself to stripping considerable of the area



**Loading out the Bakerstown Seam of coal.**

with tractors. When cover gets high it is moved with a  $2\frac{1}{2}$  yard shovel. The Bakerstown seam is not present in that vicinity and when found often requires building long road to reach it. That seam has a layer of soft bony on it which is cleaned with tractors and a Caterpillar Model 12 Motor Grader. The coal in the Bakers- town seam pit is loaded out with an Esco coal loading bucket.

The Freeport seam runs 6 feet thick and has been deep mined.

**Caterpillar D-8 Tractor stripping overburden off the Freeport Seam.**



Cover on it also rises gradually as general rule and considerable of the coal has been left in the outcrop area by the deep mines. Sam Morino is following the contour of gradually rising high spots and getting this valuable coal by stripping. Cover turns to sandstone as it gets higher. When high area is reached, it is blasted and loaded into Euclid trucks for hauling to the spoil bank or it is pushed with two Caterpillar D-8 tractors to the spoil.

# Clark & Krchmar

using only  
Modern Equipment



Model 2400 Lima Dragline moving overburden.

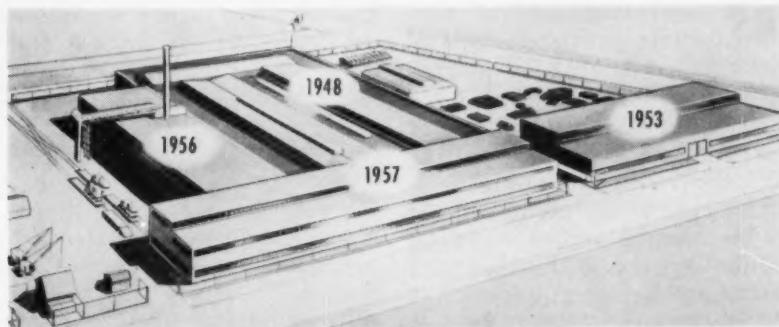


←  
Allis-Chalmers HD-21 Tractor cleaning the surface of stripped coal.



Working near Volant, Pennsylvania, Clark & Krchmar Coal Company is using all modern machinery. Stripping is done with a Model 2400 Lima dragline which moves yellow shale overburden. Coal is loaded out with a Lima Model 44 shovel. An Allis-Chalmers HD-21 tractor is used to do general work in and around the pits as well as push overburden at times.

←  
The Lima Model 44 Shovel loading out coal.



The almost uninterrupted expansion during the past decade of the manufacturing facilities of Link-Belt Speeder Corporation of Cedar Rapids, Iowa, subsidiary of Link-Belt Company is shown in the above architect's drawing. The section marked "1948" doubled the size of the original plant acquired in 1939. The additions in 1953 and 1956 are climaxed by the current expansion which can increase by 40 per cent the company's production of power shovels and cranes.

• The second major expansion in two succeeding years which can increase by 40 per cent its production of power cranes and shovels at its Cedar Rapids, Iowa, plant was announced by David W. Lehti, president of Link-Belt Speeder Corporation, subsidiary of Link-Belt Company.

"The new structure provides increased facilities for assembly, machine shop and other operations," Mr. Lehti said.

"The expansion, following immediately upon the heels of last year's addition, will give Link-Belt Speeder the capacity to take full advantage of the substantial sales potential in the nation's long-range road building program for many of its 27 models of crawler and rubber-tired shovel-cranes."

"The present addition continues

what has been a decade of almost uninterrupted expansion since 1948," he said. "In that year the original buildings which Link-Belt acquired in 1939, were replaced with modern construction, the first ever designed for the exclusive manufacture of power cranes and shovels. The new structure doubled production capacity and enabled the company to consolidate in one location the manufacture of all of its shovels and cranes. Prior to 1948 Link-Belt Speeder manufactured all machines over one-yard capacity in the Link-Belt Company Pershing Road plant in Chicago."

"The rapid succession of expansions in 1953, 1956 and the one now in progress, have made Link-Belt Speeder one of the fastest growing producers in its field," Mr. Lehti concluded.

• An entirely new method of selecting belt conveyor idlers for bulk material handling systems is introduced in Bulletin 56-80 recently published by CHAIN Belt Company of Milwaukee. The entire line of Rex-Rated belt conveyor idlers is covered in the bulletin, making it among the most complete coverage of idlers in bulk material handling industries.

The Rex-Rated idea divides belt conveyor idlers into four major service requirement classifications: Series 1000 for Moderate

Service Series 2000 for Standard Service, Series 3000 for Heavy Service, and Series 4000 for Super Service.

The bulletin includes idler selection charts and examples which enable the reader to quickly select the proper belt conveyor idler for his specific service requirements.

Type of material handled, operating conditions, and life expectancy are among the factors considered in the Rex-Rated Idler method of selecting belt conveyor idlers.

The Rex-Rated idea of belt conveyor idlers took CHAIN Belt engineers three years to develop. Actually, it is easy-to-understand application engineering.

CHAIN Belt Company also manufactures the other machinery parts of a bulk material handling system such as: pulleys, anti-friction bearings for pulley support, drive chain and sprockets, trippers, rotary belt brushes, screw and gravity take-ups, conveyor plows and scrapers, differential band brakes and back stops—all making CHAIN Belt Company a unit source of supply.

Write to CHAIN Belt Company, Milwaukee 1, Wisconsin, for your copy of Bulletin 56-80 on Rex-Rated belt conveyor idlers.

A completely new development in the drilling field that promises to make considerable reduction in initial investment plus greatly increased footage speeds in the new Tungsten Carbide Insert Saw Tooth Core Bit just announced by Hoffman Bros. Drilling Co.



Utilizing advanced technique in engineering and design, Hoffman has been able to produce a practical, economical Core Bit that works like a saw yet still operates on the conventional rig to bring-up extremely smooth cores. Extensive field tests have shown this new Saw Tooth Bit to be ideal for coring coarse grained sandstone, shale slate, limestone, etc.

• Recent purchase of a new cleaning plant for its Crichton No. 5 Mine on Williams River in Webster County, West Virginia, was announced today by Johnstown Coal & Coke Company. A Roberts & Schaefer dry-cleaning plant, the installation will remove impurities from the  $\frac{3}{8}$ " x 0 slack coal, thus affording, with present facilities, 100% cleaning of the production of this Sewell Seam mine. With the added facility, the Williams River tipple will have an overall capacity of 320 tons per hour, guaranteeing ample plant for processing the production of this 3,000 tons per day mine.

The new plant, together with other improvements and additional underground equipment planned during 1957 for the Crichton No. 5 Mine, will involve expenditures of approximately \$1,000,000. The company recently completed construction of a new portal building at the mine, providing office facilities, shower and dressing rooms for all personnel, and a large supply room.

In the Gauley Coal Field, approximately 10 miles East of Cowen, West Virginia, the mine is served by the Baltimore & Ohio Railroad.

## SCOTTDALE

DEPT. CM

BOX 51

MACHINE, FOUNDRY &  
CONSTRUCTION CO.

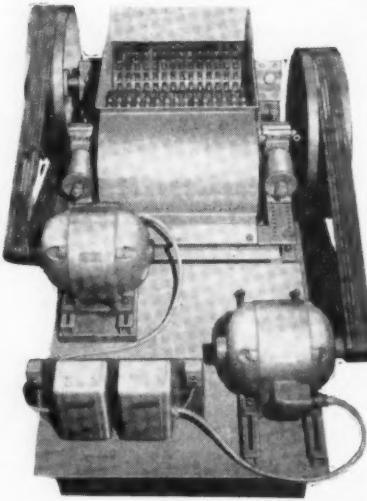
SCOTTDALE, PA.

## DOUBLE ROLL COAL CRUSHER

EFFICIENT . . . produces  
a more uniform product!

ECONOMICAL . . . uses  
less power!

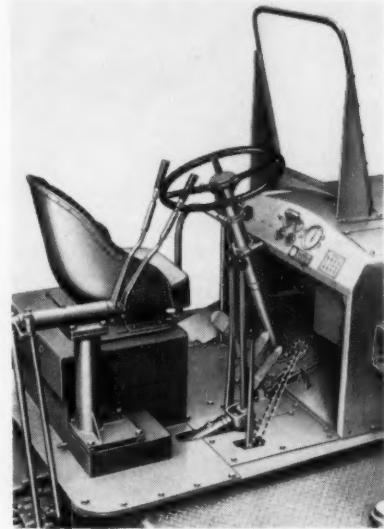
BOOSTS . . . sales—  
profits!



NO. 63 SPECIAL — 2 Motor  
Drive — Produces a Product  
 $\frac{3}{4}$ " to 8". Equipped with Two  
Grooved Flywheels. (No Gears)

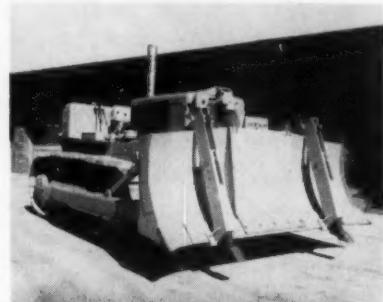
Efficient and practical the shredding action of the crushers' tooth studded double rolls turns out a more consistent product. Quality produced forged steel tooth gears, welded steel base, bronze bushed journal bearings, welded steel hopper and grooved flywheels.

Front wheel drive is engaged on the new caterpillar No. 668 Tractor by use of a lever located next to the gear shift lever. To facili-



tate ease of operation, it can be engaged or disengaged while the tractor is moving.

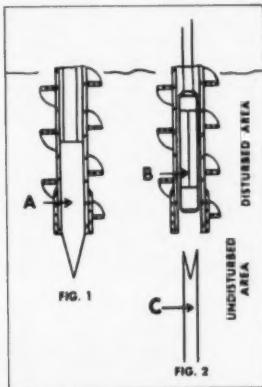
• The Ransome Corporation of 2729 Hunting Park Avenue, Philadelphia, Pennsylvania, announces the introduction of the new Model R-89 Ripper for use in heavy duty ripping, for attachment to bulldozers 43" to 60" high in the 150 to 320 h. p. tractor range. The new Model R-89 Ripper features



the one man rack and pinion depth adjustment so popular in the other models of Ransome Rippers. The Model R-89 has a 4" by 7" ripping shank with a new 28 lb. cast manganese tooth. The introduction of the Model R-89 makes available a profit making attachment for construction, coal mining, quarry and industrial work.

• A new, exclusive Hollow Stem Auger, the MDX 9026, that permits undisturbed sampling without withdrawing augers from the drilled hole, has been introduced by Mobile Drilling, Inc. of Indianapolis, Indiana.

Available in diameters from 7" to 10" O.D., 2 3/4" to 6" I.D. and in lengths from 2' to 10', the new type of auger acts as its own casing and has been effectively field tested to depths as great as 100'. A removable plug in the drill head on the lead auger prevents material from entering the auger core. When the desired depth has been reached, the plug is removed and the sampling tool lowered through the hollow augers to the strata to be tested. Wash or forced samples can be taken.



**NEW HOLLOW AUGER PERMITS SAMPLING WHILE BORING** — Mobile Drill's exclusive, new Hollow Stem Auger (the MDX 9026) acts as its own casing. As shown in Figure 1, Plug A closes hollow stem until desired depth has been reached. Plug is then removed; sampling tool B is inserted and driven through Area C to secure sample. The entire operation is performed without removing auger from hole. Coring may be continued through hollow stem of auger after rock has been reached.

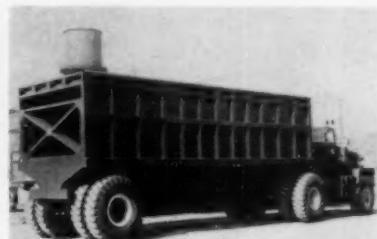
The Hollow Stem Auger may be used in any instance where casing or pipe is normally utilized, either to take disturbed or undisturbed samples or to add something to the ground, such as grout pipe, setting well points, pumping grout, setting pipe or similar jobs. It also acts as a means of casing off an area to rock.

Coring may be continued through the hollow stem of the MDX 9026 after rock has been reached. The center plug is removed and a diamond bit core barrel placed into the auger and lowered to rock. Standard core drilling procedure is then followed.

Mobile Drill's new "4-in-1" drilling rig, the B-52 "Pacemaker" (or any heavy-duty unit of comparable size and weight) is recommended for use with the new Hollow Stem Auger.

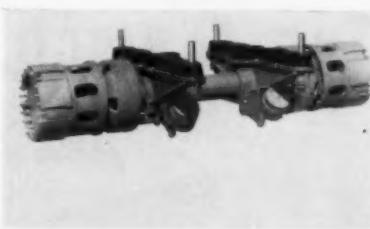
For catalog sheet with complete details, write Mobile Drilling, Incorporated, Dept. 18, 960 N. Pennsylvania Street, Indianapolis, Indiana.

• Hendrickson Mfg. Co., Lyons, Illinois, announces a special application of its 80,000 lb. Model RS Single Axle Suspension to an 80-ton, 60 cubic yard water level capacity coal trailer. This special job is one of many suspension problems Hendrickson solves with single and tandem axle rubber suspensions. In both Hendrickson tandem and single units, rubber replaces the steel leaf spring to give a fully cushioned ride during the entire range from empty to full load. Automatic cushioning



Special 80-Ton Coal Trailer equipped with Hendrickson Model RS Single Axle Suspension.

and alignment are accomplished by four drive pins encased in rubber bushings. The pins move vertically in direct relation to the movement of the load cushion. Specific advantages claimed by the manufacturer include light weight, easier ride, shock absorbing qualities and load equalizing. Hendrickson Single and Tandem Axle Suspensions cover the complete range of capacities from 22,000 lbs. to 150,000 lbs.



Hendrickson Model RS Single Axle Suspension.

**MARION**  
Power Shovels

•  
**AUSTIN WESTERN**  
Power Graders

•  
**AUSTIN WESTERN**  
Crushing Equipment

•  
**J. W. PATTERSON CO.**  
ROOK STATION CARNEGIE, PA.

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## SCOTTDALE

DEPT. CM

BOX 51

MACHINE, FOUNDRY &  
CONSTRUCTION CO.

SCOTTDALE, PA.

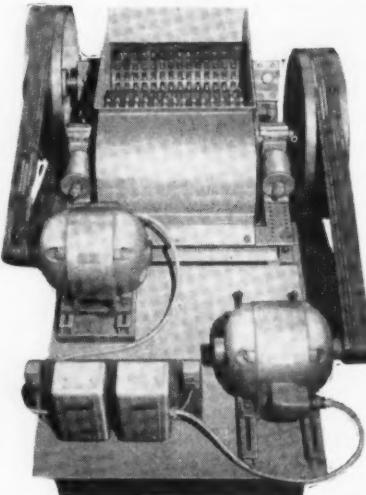
DOUBLE ROLL

# COAL CRUSHER

EFFICIENT . . . produces  
a more uniform product!

ECONOMICAL . . . uses  
less power!

BOOSTS . . . sales—  
profits!



NO. 63 SPECIAL — 2 Motor Drive — Produces a Product  $\frac{3}{4}$ " to 8". Equipped with Two Grooved Flywheels. (No Gears)

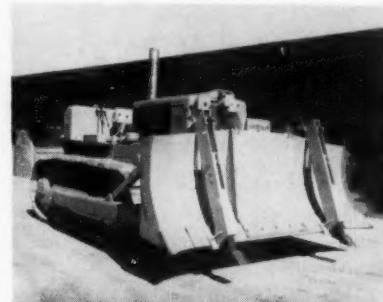
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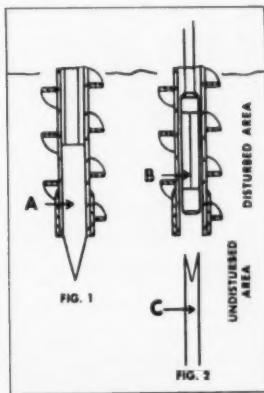
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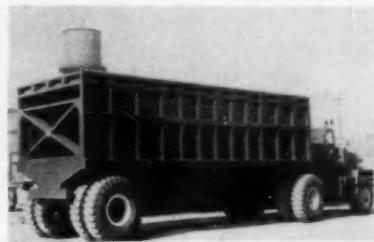
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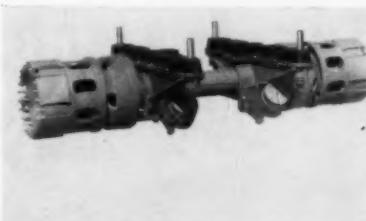
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Special 80-Ton Coal Trailer equipped with Hendrickson Model RS Single Axle Suspension.

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Hendrickson Model RS Single Axle Suspension.

## MARION Power Shovels

## AUSTIN WESTERN Power Graders

## AUSTIN WESTERN Crushing Equipment

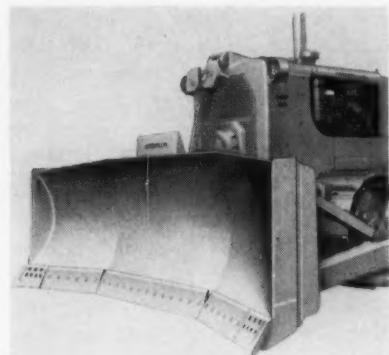
J. W. PATTERSON CO.

ROOK STATION CARNEGIE, PA.



New X-4 Whench Booster allows one man to do the work of four in loosening or tightening high-torque, threaded parts such as this large nut on a high-pressure boiler-feed pump. Used with standard socket wrenches, the compact geared-head tool boosts wrench turning force four times.

By X-4 Corporation, Action, Massachusetts, Lawrence Schneppel, Chief Engineer, Colonial 3-7052.

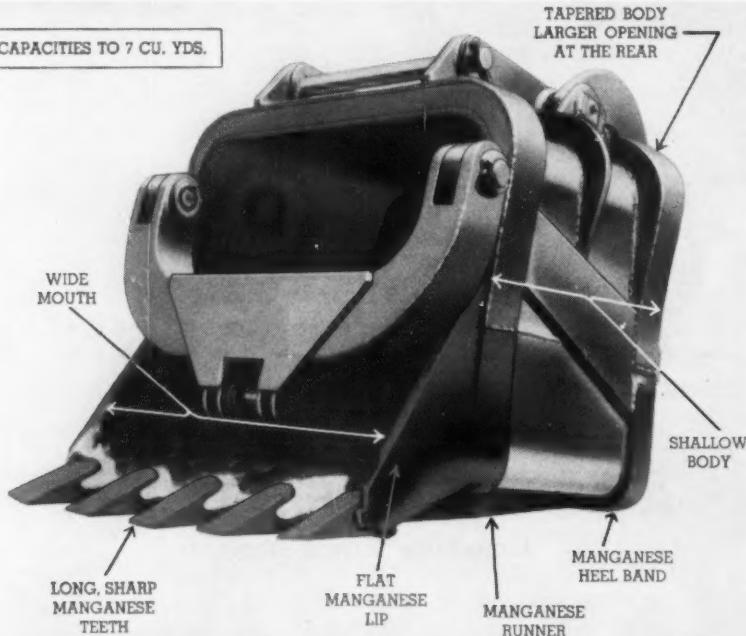


The No. 9U Bulldozer, the newest tool introduced for use with the Caterpillar D9 Tractor, is designed to minimize end-spillage of material. Its angled side sections cast material to the center, and make it especially suited for such jobs as stripping, pioneering, and coal handling.

## THE MAMCO COAL DIPPER

*...for cleaner coal--  
faster loading--larger capacities*

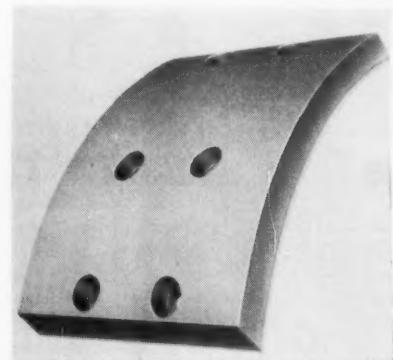
CAPACITIES TO 7 CU. YDS.



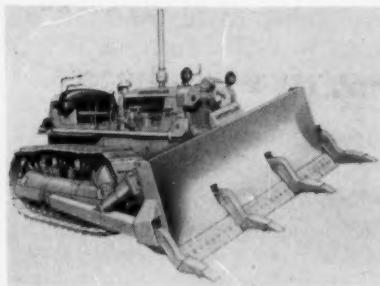
**MAXIMON MACHINE Co.**

ALTOONA, PA.

MATERIAL HANDLING EQUIPMENT • COAL PREPARATION PLANTS • OPERATING SUPPLIES



continuous down hill braking, is not affected by moisture or grease, requires fewer adjustments, and increases drum life as much as 600%. Over two years of field testing in multi-ton earthmovers, mining units, timber and commercial freight trucks, show these all-metal brake blocks last up to four times longer under severest operating conditions. For further information write The S. K. Wellman Company, Bedford, Ohio.



The Gyro Dozer, introduced at the 1957 ARBA Road Show by Caterpillar Tractor Co., represents a new idea in bulldozer design.

The four penetrating teeth allow the blade to combine the functions of ripping and moving material into one bulldozing operation. Particularly suited for working in hard to handle material, it produces full blade-loads in less time and shorter distance than conventional bulldozer blades.

• A concurrent resolution has been introduced in the Pennsylvania State Senate for the purpose of memorializing Congress to provide "adequate safeguards" against imports destructive of the U. S. economy. The resolution lists residual and crude oil imports among the foreign products responsible for economic losses in this country.

Robert T. Laing, executive director of The Central Pennsylvania Coal Producers Association, Altoona, Pennsylvania, hailed the action as "indicative of the spirit of opposition to excessive oil imports that prevails throughout both the bituminous and anthracite regions of our state." Mr Laing added:

"Assuming that both the Senate and House will act affirmatively on this matter, the resolution will be forwarded at once to Pennsylvania's Congressional delegation in hopes that it will stimulate enactment of a law to protect all coal-producing states against the very grave threat that lies ahead. We recognize that opening of the Suez Canal will otherwise expose U. S. fuel markets to veritable tidal waves of foreign crude and products.

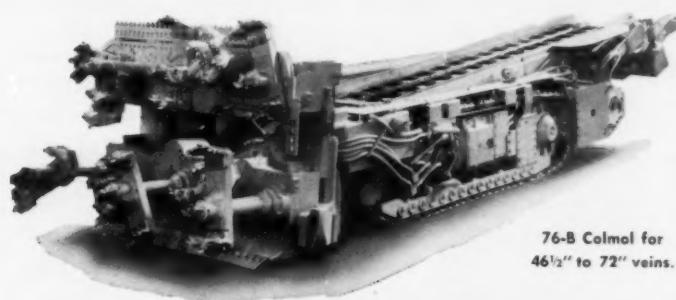
"Although few state legislative bodies are in session this year, we are also hopeful that at least West

Virginia and other states sympathetic to our cause will take similar steps at their earliest opportunities.

The resolution in the Pennsylvania State Senate was introduced by Senator Paul L. Wagner, of Tamaqua, with the following other Republican senators as cosponsors: Ernest F. Walker, Johnstown; Arthur E. Kromer, Punxsutawney; Charles R. Mallory, Hollidaysburg; J. Irving Whally, Windber; Harold E. Flack, Wilkes-Barre; and John T. Van Sant, Allentown.



The Caterpillar No. 668 (Series C) Tractor, latest addition to the company's line of wheel tractors, was introduced at the 1957 ARBA Road Show. Powered by a 300 HP (maximum output) engine, the No. 668 combines high travel speeds and increased tractive ability, through the use of four-wheel drive operation.



76-B Colmol for 46½" to 72" veins.

## for continuous mining in high or low vein coal,



76-AM Colmol for 38" to 54" veins.

## the JEFFREY COLMOL® (PATENTED)

**High production**, economy, safety—the formula for successful operation of tomorrow's mines. The Colmol gives all three... is proving its superiority with tonnage records in today's mines.

The Colmol is a big producer because it advances with minimum maneuvering. Up to 80 tons per man-shift in low coal; up to 100

tons per man-shift in high veins.

The Colmol is economical because it lowers cost-per-ton figures. It is powerful and sturdy for long trouble-free runs and minimum downtime.

The Colmol is safe because it eliminates explosives, provides centralized controls in a protected position for operator 20 feet from face.

Write for Catalog 877 describing 76-AM Colmol for low veins or Leaflet 887 describing 76-B Colmol for high coal.



MINING • CONVEYING • PROCESSING EQUIPMENT  
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

THE JEFFREY MANUFACTURING COMPANY • COLUMBUS 16, OHIO

• Three new Euclid Scrapers and a new over-hung engine bottom-dump are described in literature just issued by Euclid Division of General Motors Corporation. Models SS-18 and SS-24 are 4-wheel tractor type scrapers with struck capacities of 18 and 24 yds. and 300 h. p. engines with Torqmatic Drives. The Model S-12 Bottom-Dump is an overhung engine tractor with semi-trailer of 13 cu. yds. struck capacity which is interchangeable with a 12 yd. scraper bowl.

The Model TS-24 is an over-hung engine type twin power scraper with a capacity of 24 yds. struck and 32 yds. heaped at S.A.E. 1:1 slope. It is powered by two engines—300 h. p. with Torqmatic

Drive for the tractor and 218 h. p. with Torqmatic Drive for the scraper axle.

Literature on these units is now available from Euclid dealers or direct from Euclid Division at Cleveland 17, Ohio.

• Euclid Division of General Motors has just published descriptive literature on four new rear-dump models that are now in production. These bulletins contain specifications on the following units: Model S-7 which is an overhung engine type tractor with semi-trailer of 12 ton payload capacity; Model S-18 is also a semi-trailer with rated payload of 35 tons and heaped capacity of 32 yds.; Model R-18 is a conventional

type hauler of 18 ton capacity; Model R-40 is a tandem-axle machine powered by two engines (total of 470 or 500 h. p.) with separate Torqmatic Drives for each axle—capacity is 40 tons.

This literature is available from Euclid dealers or direct from Euclid Division at Cleveland 17, Ohio.

The new ratchet type coal cutting bit wrench reduces changing time of cutting machine bits by  $\frac{2}{3}$  over the conventional box type wrench,



reducing down time and loss of tonnage. It is definitely approved by test in two of the Western Pennsylvania's largest coal mines. Sold by Lee Supply Co., 138 Fallowfield Ave., Charleroi, Pa.

**1000 and 1  
WHYTE STRAND  
WIRE ROPES**

designed to meet every requirement of your equipment

Use MacWhyte Wire Rope on Your Toughest  
Mining Job—It's Made To Meet Your Needs!

**NORTHEASTERN SUPPLY CO.**  
321 CHERRY AVENUE CANTON, OHIO

**ZANESVILLE SUPPLY CO.** ZANESVILLE, OHIO

**MACWHYTE COMPANY**  
2000 University Avenue, Kenosha, Wisconsin  
Manufacturers of Heavy Duty Wire Ropes, Wire Rope  
Strands, Wire Rope Slings, Aircraft Cables and Assemblies, Metal  
Metals, Standard Steel Wire Ropes, and Wire Rope Assemblies.  
General catalogs available.

**MILL DEPOTS:** New York 4, 30 Water St. • Pittsburgh 16,  
204 Second Ave. • Detroit 3, 75 Coleman Blvd. • Chicago 6, 226 S.  
Des Plaines St. • St. Paul 14, 2386 Hampden Ave. • Ft. Worth 1,  
P.O. Box 652 • Portland 6, 1622 N.W. 18th Ave. • Seattle 4, 97  
Harper St. • San Francisco 7, 180 King St. • Los Angeles 21,  
2505 Sacramento. Distributors conveniently located throughout  
the United States.



The side dumping bucket attachment for Traxcavators, introduced at the 1957 ARBA Road Show, provides increased dumping versatility in many loading operations.

The new bucket eliminates a great deal of the turning necessary for material loading, by allowing the loading and carrying vehicles to operate in parallel directions. Its construction is sufficiently rugged to allow it to be used in most standard Traxcavator applications.

**Save on Your  
INDUSTRIAL  
TRACK**

**FOSTER  
QUALITY**

**RELAYING RAILS**

Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.

SEND FOR CATALOGS

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PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4  
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

## Good Used Coal Stripping Equipment

5480 Marion Electric 15 yard Shovel  
1600 P&H Electric 6 yard Shovel  
2400 Lima 6 yard Standard Shovel  
88-B Bucyrus Erie 4 yard Shovel and Drag,  
90', 4 yd.  
4500 Manitowoc 4 yard H. L. Shovel  
111-M Marion 3 yard H. L. Shovel  
1201 Lima 2½ yard H. L. Shovel  
3500 Manitowoc 2 yard H. L. Shovel  
Unit 1020 3½ yd. Shovel—1 yr. old  
625 Page Diesel Drag, 160', 9 yd.  
6160 Monighan Drag, 160', 8 yd.  
625 Page Diesel Drag, 150', 10 yd.  
4500 Manitowoc Drag, 140', 4½ yd.  
621-S Page Diesel Drag, 135', 6 yd.  
7200 Marion Diesel Drag, 135', 5½ yd.  
621-S Page Diesel Drag, 125', 7½ yd.  
200-W Page Diesel Drag, 125', 7½ yd.  
7-W Monighan Elec. Drag, 120', 7 yd.  
618 Page Diesel Drag, 120', 5 yd.  
5-W Bucyrus Monighan Drag, 120', 5 yd.  
2400 Lima Dragline, 110', 6 yard  
111-M Marion Diesel Drag, 80', 5 yd.  
1055 P&H Dragline, 80', 3½ yd.  
1201 Lima Dragline, 85', 3 yard  
955 P&H Dragline, 90', 2½ yard  
3500 Manitowoc 60 ton Crane  
802 Lima Cranes  
4161 Marion Comb. Elec. Drag & Shovel  
100-B Comb. Electric Dragline and Shovel  
1201 Lima Comb. Shovel and Crane  
600 Reich Heavy Truck Mounted Rotary  
Air Drills  
McCarthy Coal Auger Drill  
Mayhew Rotary Truck Mounted Air Drills  
Portadrill Truck Mounted Air Drill  
42-T, 29-T, and 27-T Well Drills  
Euclid Trucks—Bottom and Rear Dumps  
Bay City, Lorain, P&H, Northwest and  
Osmund Truck Cranes  
Caterpillar, International and Allis-Chal-  
mers Bulldozers

## FRANK SWABB Equipment Co., Inc.

313 Hazleton Nat'l Bank Bldg.  
Hazleton, Pa., GLadstone 5-3658

**For Sale**

Two (2) used 5½ yard Page Dragline Buckets complete from cable to cable—good condition. Price—\$2000.00 each, F. O. B. our job.

1 2½ yard bucket for Bucyrus-Erie 54-B standard front shovel. Price—\$400.00, F.O.B. our job.

C. V. FINK & SON  
Woodland, Pennsylvania

**NOW at  
BECKWITH  
MACHINERY COMPANY**

**BONDED  
BUY**

## USED EQUIPMENT

Item 1056-WV209 Caterpillar Model D8 Tractor with No. 25 Cable Control and No. 6A Bulldozer. Diesel engine rebuilt with new main and rod bearings, rings and new rods; oil pump rebuilt; ten new bottom rollers and two rebuilt; rebuilt master clutch and repaired steering clutches; repaired final drives with new seals and bearings; rebuilt water pump and starting engine bendix. This unit in very good condition. \$18,500.00  
FOB Clarksburg, W. Va.

Item 1056-P522 Caterpillar Model D7 Tractor with LeTourneau Rear Double Drum Cable Control Unit and Cat 7A Angle Blade. The 7A blade and heavy duty radiator shroud was installed new approximately 18 months ago; diesel engine and starting engine were completely rebuilt; master clutch and transmission were rebuilt; bevel gear shaft and seals were replaced and steering clutches reconditioned; new seals were installed in final drive; hydraulic steering boosters rebuilt; track roller frames were reconditioned; new recoil spring installed; new solid type idlers installed; reconditioned bottom rollers and installed new pins and bushings in tracks; serviced, steam cleaned and painted.

\$10,300.00 FOB Pittsburgh, Pa.

Item 756-WV197 Caterpillar D7 Diesel Tractor with LeTourneau Straight Dozer and LeTourneau Rear D. D. Cable Control Unit. Steam cleaned and painted. AS IS. WHERE IS. \$4,000.00  
FOB Clarksburg, W. Va.

Item 956-C340 Caterpillar Model D7 Tractor with LeTourneau Straight Blade and Rear Cable Control. Engine seems to be in good operating condition; starting engine repaired; fair tracks, rollers, idlers and sprockets; steam cleaned and painted. Buy and try. \$2,800.00 FOB Clearfield, Pa.

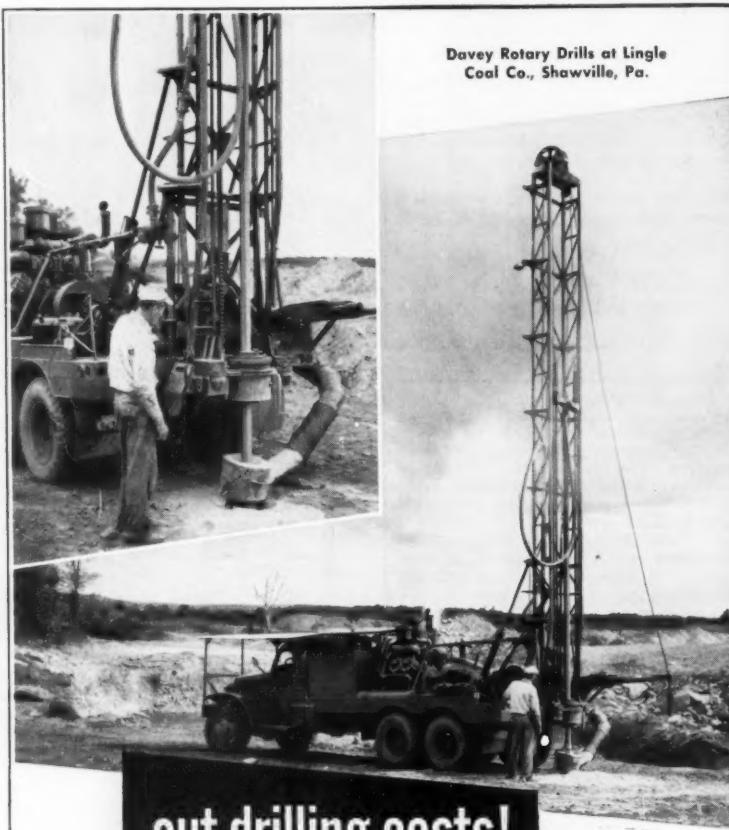
Item 555-B157 Caterpillar D8 Tractor equipped with LeTourneau Bulldozer and LeTourneau Single Drum Power Control Unit. Has worked approximately 30 days since new track assemblies, sprockets, and track roller assemblies were installed. Balance of tractor in good working condition.

\$5,504.00 FOB Bradford, Pa.

## BECKWITH MACHINERY COMPANY

6550 Hamilton Avenue, Pittsburgh, Pa.  
361-369 Congress St., Bradford, Pa.  
Old Town Road, Clearfield, Pa.  
1356 E. 12th Street, Erie, Pa.  
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Davey Rotary Drills at Lingle  
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**cut drilling costs!**

**DAVEY**  
ROTARY DRILLS

For faster, more economical drilling . . . increased coal production at lower costs, leading strip operators rely on Davey. Suitable for mounting on any make of truck, Davey Rotary Drills move fast between blast holes . . . are ideal for low cost core drilling with air . . . easy to set in drilling position.

Daveys are available in 6 different models—air blast, mud pump, or combination types. Rated capacities to 2,000 ft. Outstanding features include choice of power take-off or separate power unit operation, automatic hydraulic feed, hydraulic pull down, heavy-duty rotary table, rugged tubular box-type mast . . .

AA-1697

**Write for full details!**

**DAVEY**

pioneers of  
"air-cooled air"

DAVEY COMPRESSOR CO. • KENT, OHIO



Portable Compressors



"Auto-Air"  
Compressors



Field Service Units



Industrial  
Compressors

Rotary Drills

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APRIL, 1957

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• Mobile Drilling, Inc., Indianapolis, Indiana, has purchased the Earth Drill business of the Buda Division of Allis-Chalmers Manufacturing Company. Inventories are being moved to the Mobile Drilling plant in Indianapolis. Dealers who have been selling Earth Drills will be able to secure parts and service from Mobile Drilling, Inc.

No other products of the Buda Division or of Allis-Chalmers Manufacturing Company are involved in the transaction.

This acquisition substantially increases the range of models and sizes of Earth Drilling equipment offered by Mobile, enabling them to sell into wider markets than previously reached.

**It Pays To Advertise  
In Coal Mining**

# Guaranteed Used Equipment

## BACKED BY A BOND!



The only bond of its kind  
issued for the positive pro-  
tection of used Caterpillar  
equipment buyers!

Only Cleveland Brothers in this area can issue this bond. It means that any defective parts in a BONDED machine will be corrected at no cost for parts or labor, up to \$10,000.00. In buying used equipment, the guesswork is gone!

We've listed some of our current Bonded-Buys in this ad. Drop in at your convenience and let us show you many more comparable buys.

In addition to Bonded-Buys in used Caterpillar equipment, we offer the finest job-and-profit proved new equipment . . . the most complete service facilities and 4 very convenient locations.

### BONDED BUYS

*Today . . .*

● CATERPILLAR D8 TRACTOR, Serial No. 2U16495 with Cat No. 25 Cable Control Unit and 8A Blade. In excellent operating condition, undercarriage 90% new. F. O. B. Hbg., Pa. \$13,500.00

● CATERPILLAR D8 TRACTOR, Serial No. 2U12948, with No. 25 CCU and 8A Blade. Rebuilt, new tracks and grousers. Tractor ready for work. F. O. B. Hbg., Pa.

\$15,000.00

● CATERPILLAR D8 TRACTOR, Serial No. 2U8653 with Cat No. 25 Rear Cable Control Unit and 8S Blade. Worked only 800 hours since being completely rebuilt. F. O. B. Wilkes-Barre, Pa. \$14,500.00

● CATERPILLAR D6 TRACTOR, Serial No. 8U5280, with Cat Hydraulic Control & Cat Angle Blade. New undercarriage, new tracks, rollers rebuilt or replaced, new sprockets and idlers. F. O. B. Hbg., Pa.

\$8,500.00

● CATERPILLAR D4 TRACTOR, Serial No. 7U17960, with HT-4 Traxcavator. Rebuilt with new tracks, triple grousers and carrier rollers. This loader is ready to make money for you. F. O. B. Wilkes-Barre, Pa.

\$7,850.00

● CATERPILLAR No. 70 SCRAPER, Serial No. 8C2414. Tires in excellent condition, new bottom and new retention springs. A very clean machine. F. O. B. Hbg., Pa. \$6,500.00

● CATERPILLAR No. 12 MOTOR GRADER, Serial No. 9K7101, with scarifier, cab and lights. New cutting edge and end bits. Ready for many years of faithful service. F. O. B. Wilkes-Barre, Pa. \$5,500.00

● CATERPILLAR MODEL D17000 DIESEL ENGINE, Serial No. 8S-6765, with extended shaft and outboard bearing. This engine is new and a real bargain. F. O. B. Wilkes-Barre, Pa. \$8,795.00

● CATERPILLAR MODEL D13000 DIESEL ENGINE with extended shaft, outboard bearing and hood side doors. In excellent running condition. F. O. B. Hbg., Pa. \$3,500.00

These items are subject to prior sale.

\*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**HARRISBURG**  
Route 322 (Hershey Road)  
Phone CEdar 6-7981

**WILKES-BARRE**  
Route 309 (Ashley By-Pass)  
Phone VAiley 2-8141

**FRACKVILLE**  
Route 122 (State Road)  
Phone 701

**PHILIPSBURG**  
307 Alder St.  
Phone 90



# CLEVELAND BROTHERS

EQUIPMENT COMPANY

CATERPILLAR EARTHMOVING EQUIPMENT • BUCYRUS-ERIE EXCAVATORS



**"Talk up" increased production—greater safety...with these**  
**M - S - A**  
**COMMUNICATION**  
**SYSTEMS**

#### **M-S-A MINEPHONE**

Dispatcher sends orders instantly and simultaneously to all motormen with this modern, underground two-way voice communication system. Motormen receive and reply while trips are in motion—keep haulage movements coordinated with production demands. This results in smoother, faster, and more continuous trip movements throughout the mine.

Messages clear tracks for outgoing loaded trips and incoming empties. This system puts an end to traffic tie-ups, errors and accidents; prevents excessive stop-and-start strain on equipment. Write for more detailed information.



• Dispatcher sends orders to motormen . . . routes right-of-way traffic . . . receives reports on positions and station conditions.

• "Jeep" operator requests instructions from dispatcher and maintenance shop for section assignment . . . speeds emergency repair.

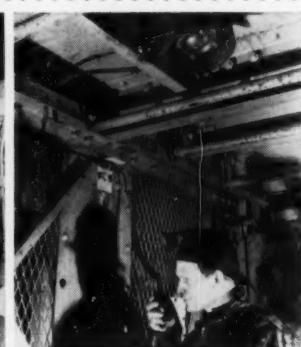
#### **M-S-A HOISTPHONE**

For accurate, instant response between the hoisting engineer and cage, here's the voice communication system to install. Whatever the job—load leveling—shaft repairs—shaft inspection trips—passenger transportation—the M-S-A HoistPhone provides better safety and efficiency through dependable, continuous two-way voice communication at any level, and while the cage is in motion.

Requires no special training . . . simple to use . . . dependable in operation. Write for further information.



• The hoisting engineer is able to control all movements of the cage by communicating with cage rider over the M-S-A HoistPhone.



• Worker uses microphone in cage to tell the hoisting engineer where he wants to go. Loudspeaker mounted on top of cage.



When you have a safety problem, M-S-A is at your service . . . our job is to help you

#### **MINE SAFETY APPLIANCES COMPANY**

201 North Braddock Avenue, Pittsburgh 8, Pa.

At Your Service: 77 Branch Offices in the United States and Mexico

#### **MINE SAFETY APPLIANCES CO. OF CANADA, LTD.**

Toronto, Montreal, Calgary, Edmonton, Winnipeg, Vancouver, Sydney, N.S.



## You'll be **MONEY AHEAD**

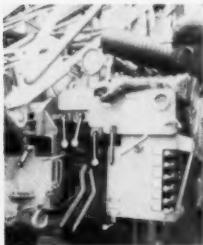
after you  
make these  
**TESTS**  
of drill rigs  
side-by-side in  
same material

**You'll get results like these — 4 recent tests:**

- **52% more hole** per hour drilled in hard dense sandstone by Reich Drill than by other rotary drill of the same rated capacity.
- **80% more hole** drilled by Reich 650-H-25 in shale and medium sandstone, than by other hydraulic powered rotary of same rated capacity.
- **Weighing 6½ tons less** than a crawler rotary that cost almost twice as much— Reich 650 drilled 7½" holes approximately as fast in hard tough sandstone.
- **238 ft. per hour** in medium sandstone and shale drilled by Reich 750-H-45 Crawler in 3½-hour test, drilling 40 to 50 ft. holes—including all moves.

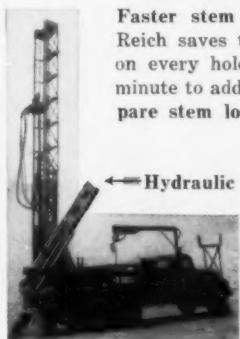
*(Full details of the above cases sent on request)*

Where does the Reich get such speed? It's **BUILT IN!**



Exactly Right Drilling Speed in every material, from hardest to softest. The only hydraulic rotary with infinitely variable drilling speed.

Easiest operation with minimum of control levers and no "strong-arm" levers to slow the operator—all controls actuated by hydraulic power. A real one-man drill rig.



Faster stem loading of the Reich saves time and money on every hole. Less than a minute to add a stem. Compare stem loading.

← Hydraulic Stem Loader.  
Barrel → Stem Loader



Find out the Extra Profit you'll make with a Reich Drill. Records made by these rigs are not secrets. Inquire of owners nearest you, what results they are getting—we'll tell you where they are. They have found the Reich the biggest producer, by far the most profitable drill rig you can own. Write, wire or phone—

**FRANK SWABB EQUIPMENT CO.**

Hazleton National Bank Bldg., Hazleton, Pa., GLadstone 5-3658

**It will pay you to buy what REICH has for you) NOW**

*(You'll out-drill the machines being built like the Reichs of several years ago)*

Compare Pumps, Motors, Gears, Frames, other vital parts—and you'll buy a Reich. The construction is so much sturdier that you have to see it to believe it. This extra strength saves you valuable drilling time, and many dollars of upkeep expense.



**REICH 650**



## ALLIS-CHALMERS ADVANCED DESIGN *turns waste time into work time*

You get *extra* money-making *work time* with an Allis-Chalmers crawler tractor on every job—dozing, winching, towing, pushing. Built for today's jobs, these crawlers are wheeling out more work in less time than comparable size machines.

### Look at the facts

#### 1,000-hour lubrication intervals save lube time

Allis-Chalmers tractors start the day with *go*—not greasing. You can operate six months on a 40-hour week basis with just one lubrication of truck wheels, front idlers and support rollers. Designed with Positive Seals and tapered roller bearings, these units are protected from dust, loose sand, soft ground, mud or water. You not only gain *working time*, but save labor and lubricant costs as well.

#### Modern shift pattern speeds digging

Here's a big timesaver on dozing work. It takes just half the time and effort to change from low forward to fast reverse with the Allis-Chalmers HD-6, HD-11, or HD-16 transmission. One simple shift of the gear lever does the job. You gain production time — up to 25 percent on actual test — on jobs calling for a short forward-backward cycle.

No need to remove transmission or engine, radiator, grille, when servicing or removing an Allis-Chalmers master clutch. This unit can be removed without disturbing adjacent parts. This is also true of other main assemblies — final drive gear, transmission, steering clutches, engine and truck frame. As a result, hours of *costly service and downtime are saved* because of Allis-Chalmers advanced design.

See your **ALLIS-CHALMERS** construction machinery dealer

*Highway*

#### HIGHWAY EQUIPMENT COMPANY

6465 Hamilton Ave. • Pittsburgh 6, Pa.

Allis-Chalmers • Lima Shovels, Cranes, Draglines • Master General Motors Diesel Engines • Power-Pack Conveyors Gar Wood • Lima Roadpackers • Burmeister Mixers and Bins

Michigan Tractor Shovels and Excavator-Cranes

Thor • Jaeger